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Addressing the Higher Level Language Skills for the Common Core State Standards in Kindergarten

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ADDRESSING THE HIGHER LEVEL LANGUAGE SKILLS FOR THE COMMON CORE STATE STANDARDS IN KINDERGARTEN

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements of the degree of Doctor of Philosophy in

The Department of Communication Sciences and Disorders

by

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B.A., Louisiana State University, 2004
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August 2013
This work is dedicated to Sophie Juin and Lowell Jacque who have taught me more than I could ever learn from a book. May you and all children experience the gift of reading.

In loving memory of my grandparents who are looking down from Heaven: Paul N. Bourque Sr., Howard L. Lasseigne, and Betty Louvier Lasseigne. It was with you and MawMaw, LaVerne Stein Bourque, that I learned the value and importance of education and dedication needed to see through anything you set your mind to. Thank you all!
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ABSTRACT

Kindergarten is a critical year, providing a foundation for children’s success in school. The newly adopted Common Core State Standards (CCSS) specify the literacy skills considered essential for success, including thirty-two language goals. Children seen by the speech-language pathologist (SLP) are at-risk for literacy because of language delays associated with developmental disabilities or delays (Catts, Adolf & Weismer, 2006; Kuhn & Stahl, 2003). This study explored whether a literacy-based language intervention implemented with at-risk kindergarteners by SLPs could improve the broad range of language skills profiled by the CCSS. The impact on oral and written language skills was examined.

Five speech-language pathologists were trained to use a scaffolded multilevel approach to storybook reading. Discussions of illustrated events from the book were systematically talked about across a continuum of language levels from enumerating objects using a name or label and describing actions, through higher level inferential, evaluative, and metalinguistic concepts including phoneme and grapheme awareness skills. Eighteen kindergarteners with identified delays received the intervention twice weekly for 32 weeks. A control group of 18 kindergarteners with comparable language scores at pretest did not receive the treatment, although all were enrolled in other interventions for reading.

The results of the study revealed that the intervention group made statistically significant gains in overall language, semantic, syntactic, and articulation skills. The gains were also clinically significant, with the majority of intervention subjects gaining near or greater than one standard deviation of change from pre- to posttest; these gains
were not evident in the comparison group. Gains in written language skills were comparable to those made by the control group who received reading interventions. The results of the study indicate that utilizing scaffolded talk across a continuum of increasing more decentered meanings in kindergarten holds potential to address the broad range of language goals of the CCSS.
INTRODUCTION AND LITERATURE REVIEW

Since the era of the one-room school house, teachers have developed or used curricula designed to be developmentally appropriate for different grade levels of students. As publishers began to develop textbooks, they made efforts to provide continuity within and across grade levels. The Scope and Sequence mapped out the skills that would be taught in a content area, including the breadth and depth of learning that would be targeted over a time period such as a semester or year. The sequence in which skills are introduced is also planned so that the foundation for a skill is taught before higher level variants are introduced. However, each publisher independently developed the Scope and Sequence for their curriculum so there was no unity across classrooms, cities or states. In 2001, the No Child Left Behind Act required each state to define the Grade-Level Expectations (GLEs) for all academic content areas for grades prekindergarten through 12. The GLEs specified the knowledge, concepts, and skills that each student should know and be able to do by the end of each grade level. Publishers modified their Scope and Sequence to align with the GLEs of different states because there was wide variation between the GLE standards across states. By 2009, the states recognized the need for uniform expectations across states and began to meet to develop a common core of standards that all would adopt. In 2010, the Common Core State Standards (CCSS) were finalized and made available to states for adoption. The CCSS identify critical skills in numeracy and literacy, profiling the development of these abilities beginning in kindergarten and showing the progressive increases in complexity of these same skills through high school. With this unified view, all individuals working with students, including speech-language pathologists, are expected to provide instruction that will enable children to succeed in the skills profiled in the standards (CCSS, 2011).
Kindergarten is a critical year, providing a foundation for children’s success in meeting the standards in subsequent years. This is a year when children must refine their oral language skills to achieve “literate language talk” (Monroe, 1951; Westby, 1985) while simultaneously acquiring early written language abilities. Language development is foundational to the standards, which can be seen by examining any of the core skills, especially in English Language Arts (ELA). The standards for Reading in kindergarten include the ability to ask/answer questions, draw inferences, interpret text using story grammar, and making a story to text relationship. Among the Foundational Skills standards are phonemic awareness and alphabet learning, as well as reading for meaning and purpose. Speaking and Listening standards focus on identifying key details, and speaking and expressing thoughts clearly, including describing familiar people, places and events. The Language standards expect children to be competent in the use of Standard English, including plurals, prepositions, complete sentences, and question words. The Vocabulary standards for kindergarten go beyond knowing words to understanding words with multiple meaning, shades of meaning, affixes, and conceptualizing words by categories, opposites, real-life connections, words and phrases. Since these same standards remain and increase in complexity in each successive grade level, it is critical that these language abilities be developed during that kindergarten year.

Typically developing children enter kindergarten with many of these language skills well developed and ready for further refinement that occurs through classroom discussions and literacy-based activities. But other children, either because of lack of exposure during the preschool years (Aikens & Barbarin, 2008; Hart & Risley, 1995; Schachter, 1979; Snow, Burns & Griffin, 1998) or because of language delays associated with developmental disabilities or delays (e.g., Catts, Adlof, & Weismer, 2006; Gough & Tunmer, 1986; Kuhn & Stahl, 2003;
Nation & Snowling, 1998; Yuill & Oakhill, 1991) are already far behind their peers upon entrance into kindergarten. Some of these children enter kindergarten with IEPs for speech and language services while others are identified during the kindergarten school year. In the past, SLPs might have identified speech and/or language skills to target for intervention without regard to the classroom curriculum. However, CCSS is changing this process as the wording of the standards insist that instruction in writing, speaking, listening and language be a shared responsibility among all personnel who see students (CCSS, p. 4). This wording and the focus on CCSS throughout the school suggest the Speech Language Pathologist (SLP) must possess a high level of knowledge about the standards and that interventions must be directly aimed at helping children achieve or work toward meeting the standards.

The purpose of this study is to determine if the broad range of language skills profiled by the kindergarten ELA standards of the CCSS can be improved for students with language deficits using a focused, multi-leveled approach to talking about a picture implemented in a small group by an SLP. If a broad range of language skills can be impacted using this approach, then it can be shown that SLPs can make a vital contribution toward achieving CCSS for at-risk students.

**Language-Literacy Deficits**

Language is a critical foundational skill for reading development. For most children, spoken language is an asset in the beginning stages of reading, and learning to read is largely a process of learning to decode (Adams, 1990; Ehri, 2002). Gough and Tunmer (1986) explored this proposition in their model, termed the Simple View of Reading. According to the Simple View, children begin learning to read with already well developed oral language abilities, including vocabulary, grammar, and phonological representations that exceed the language demands of beginning level text. Therefore, the only new skill a reader has to acquire is the
ability to decode print. Once the print is decoded, the reader simply enacts the same mechanism used to interpret oral language to also interpret written language. Reading instruction is therefore viewed as a narrow decoding problem and instructional efforts should initially be directed toward this goal.

As children progress through grade levels, deficits in comprehension can be predicted if the ability to decode words and general language skills are known. If word recognition is fluent and rapid, and oral language skills are developing typically, then it is predicted that the child will be a good reader with independent comprehension. In contrast, deficits in either decoding or oral language abilities will result in deficits in comprehension. Children with good oral language but poor decoding fit the profile of dyslexia, where poor decoding limits comprehension because the words can’t be accessed. Those with good decoding but poor language would exhibit word calling with limited meaning. The most common problem would include difficulty with both, a profile Gough and Tunmer (1986) described as garden variety reading difficulties. This group has difficulty with the full range of language abilities needed for reading and were relabeled by Catts and Kamhi (2005) as those with language learning disabilities.

To further explore the relationship between language and reading, Catts et al. (2006) assessed students with good decoding but poor reading comprehension (i.e., poor comprehenders), students with poor decoding but good comprehension (i.e., poor decoders), and typical readers. They found that those with good decoding but poor comprehension had lower basic language abilities than the other two groups. Those with poor decoding scored lower on tests of phonological processing but well on basic oral language skills. Similarly, Hoover and Gough (1990) followed 250 students longitudinally, beginning in kindergarten and reassessed
annually through fourth grade. The correlations between the predicted and actual reading comprehension scores were higher than \( r = 0.8 \) at all grade levels showing a robust relationship between language abilities and reading.

Scarborough (1998) and Catts, Hogan and Adolf (2005) argued that one of the reasons so much emphasis has been placed on decoding as the source for reading problems is that the primary target of the research has been early elementary students in the beginning stages of reading. These researchers predicted that as readers got older, the proportions of these subgroups would change and the contributions of comprehension to overall reading performance would increase. This is exactly what they found when they looked at the trajectory of reading problems. By fourth grade and beyond, decoding abilities accounted for very little of the variance in reading performance and language skills became more predictive.

Several researchers have explored comprehension deficits. Yuill and Oakhill (1991) found that children with specific comprehension problems could recall verbatim details of a story, but could not provide the overall “gist” or meaning of the story. They could not respond to questions requiring higher level interpretations or make appropriate inferences required to understand the meaning. These findings suggested the details were recalled using short-term memory, which was determined to be average, but deeper levels of comprehension were not processed. To further explore the nature of these deficits, Nation, Adams, Bowyer-Crane, and Snowling (1999) tested children’s ability to recall real and nonsense words, abstract words, and listening spans for sentences. Both abstract words and listening spans for sentences were impaired among children with specific comprehension problems implying they displayed difficulty with semantic and morpho-syntactic aspects of language. Nation and Snowling (1998) showed that children with specific comprehension problems were poor at using context to
facilitate reading comprehension. Kuhn and Stahl (2003) found that even when children with specific comprehension problems accurately read words, the prosodic interpretation of the text did not match the meaning expressed by the language. This finding suggests that rapid word recognition is not sufficient for reading fluency and comprehension.

The relationship between oral language disorders and reading disabilities is evident from the early stages of reading instruction, with a strong overlap between children receiving speech and language services in the schools and children receiving reading services. Gosse, Hoffman, and Invernizzi (2009) showed that between 9%-11% of kindergarten and first grade students are identified for reading problems, and 6% for speech/language. Of that 6%, one out of four (25%) has a comorbid reading disability diagnosis. The comorbidity between specific sound disorders (SSD) and reading disabilities is 25-30%, leading to the suggestion that an underlying phonological processing deficit causes both the articulation and reading deficits, including phonemic awareness deficits (Bird, Bishop, & Freeman, 1995; Leitao & Fletcher, 2004; Lewis & Freebairn, 1992). In addition, if a child’s articulation deficit persists, the child is more likely to have a reading delay. If the child also shows a language impairment, the rate of comorbid reading disability is 66% (Peterson, Pennington, Shriberg, & Boada, 2009). Norris and Meaux (2012) showed that all of the low socio-economic status (SES) children who had been on the caseload for SSD in kindergarten showed deficits in two or more measures of written language in 2nd grade.

Performance on phonological awareness tasks has also been shown to be highly predictive of reading deficits. Torgeson (2000) showed that twenty percent of children in preschool and kindergarten failed to acquire phonological awareness skills including children with language disorders as well as those from low SES families (Fernandez-Fein & Baker, 1997;
Lundberg, 2009). Bird et al. (1995) found that children with phonological impairments scored significantly below matched peers (age and nonverbal ability) for phonological awareness and reading, independent of whether they had additional language impairments. Difficulty was shown in reading and spelling real and nonwords even when letter-sounds were known. Rvachew and Grawburg (2006) showed that those speech impaired preK children who also had poor speech perception and/or poor receptive vocabulary showed a delay in phonemic awareness. Others have similarly identified phonological awareness deficits in children with speech impairments (Gillon, 2005; Hesketh, Dima, & Nelson, 2007). Children with specific language impairment have been found to perform significantly below age and SES matched peers on phonological awareness and reading tasks (Boudreau & Hedberg, 1999; Catts, Fey, Tomblin, & Zhang, 2002; Gillon, 2000; Nathan, Stackhouse, Goulandris, & Snowling, 2004). Thatcher (2010) compared the development of phonological awareness in children with specific language impairment at preschool, kindergarten, and first grade. Typically developing children outperformed the children with specific language impairment on all measures and continued to make steady gains across time that were not mirrored in children with specific language impairment. However, Gillon (2002) showed that 5-7 year old children with spoken language impairment who received phonological awareness training that also strengthened phoneme-grapheme connections made gains immediately following intervention and showed age-level reading 11 months later compared to a control group with spoken language impairment who remained poor readers. Van Kleeck, Gillam, and McFadden (1998) showed that prekindergarten children with language impairment who received training in rhyming and phonemic awareness made greater gains in both areas than a control group.
This research demonstrates that children with language impairment are at-risk for concomitant reading disabilities, and that with age the profile changes from decoding problems to long-term comprehension deficits. Poor phonological awareness is one of the early reading deficits apparent in kindergarten, but the few studies available show language impaired children do respond to phonemic awareness intervention.

**Scaffolded Storybook Reading**

**Early reading development.** Storybook reading has also been shown to be an effective context for providing early reading intervention for children with language impairment. Justice, Chow, Capellini, Flanigan, and Colton (2003) provided intervention to 4-5 year old children with language delays from low-income homes. Participants alternately participated in 6 weeks targeting print knowledge and phonological awareness, or a storybook reading condition that focused on meaning. Results indicated substantial literacy growth across the 12-week intervention period for both print knowledge and phonological awareness, with the greatest gains in alphabet knowledge, phonological segmentation, and rhyme. Results also indicated that oral language skill and interest in literacy were strong predictors of performance at posttest for typically developing children and for children at-risk because of poverty and/or language delay.

Justice, Ritter, Gray, and Pillow (2005) engaged thirty 4-5 year old preschoolers (22 typically developing, 8 language impaired) in storybook reading with an explicit focus on phonemic awareness. Following 12 sessions, the language impaired children showed gains primarily in segmentation, while typically developing children made gains in all phonological awareness skills. They concluded that both groups benefitted from teaching phonological awareness skills in a storybook reading context, although more time and exposures were needed for language impaired children. Crowe (2000) showed that language impaired preschoolers
taught to attend to print and phoneme awareness skills improved in these behaviors compared to
groups taught to attend to the meaning of the story.

Ezell, Justice, and Parsons (2000) examined receptive ad expressive alphabet and print
knowledge following shared book storybook reading. Following five training sessions focusing
on print referencing, tracking print, book management, and print awareness strategies, all parents
made gains in print-referencing. Justice and Ezell (2002) demonstrated that typically developing
children responded equally to book-reading and word-reading references, including behaviors
such as predicting a word from the text or other behaviors that were above their independent skill
level. Justice and Ezell (2002) also showed significant gains among 3-5 year old low SES
children participating in Head Start when provided print-focus reading sessions.

Brazier-Carter (2008) trained Head Start preschool teachers to incorporate multiple
language skills in daily storybook reading. One group read Phonic Faces Alphabet Storybooks
(PF Storybooks; see Figure 1.1) that were designed to elicit talk about letters and letter sounds as
the other group read typical emergent reading books. As a natural part of the PF Alphabet
Storybook, focus is on one specific phoneme that is depicted using a Phonic Face character (e.g.,
Peter’s top lip is depicted with a letter P suggesting the /p/ sound). Following daily reading for 6
weeks, teachers using PF Alphabet Storybooks made significantly more reference to phonemic
awareness, print referencing, and meaning (vocabulary and story elaboration). Consequently,
their students also performed better on measures of vocabulary, print concepts, and phonemic
awareness. Brazier-Carter (2008) provided evidence that a teacher’s consistency and frequency
for referencing and teaching pre-reading skills (i.e., phonemic awareness and print awareness)
was not at the expense of meaning.
Banajee (2007) used PF Alphabet Storybooks in an intervention for three children with severe speech and physical disabilities. For this population, the PF storybooks were adapted to allow the children to use a single lever switch to manipulate the book. Following six weeks of intervention, all three participants in the PF Alphabet Storybook phase exhibited a greater number of letter and letter-sound identifications, as well as the ability to identify the location of letters and sounds in all word positions when compared to the control condition. Additionally, this group also exhibited improvements in gain scores for rhyming, phoneme deletion, substitution, isolation, segmentation, blending, letter sounds, and word recognition. Terrel (2007) used a simpler version of PF Alphabet storybooks for sixteen 20-24 month old children. These books utilized a PF accompanied by only a few pictures of familiar objects that began with the same sound. After 18 sessions, the children in the experimental condition exhibited an increase in letter identification, letter discrimination, and letter-sound production. These findings were maintained six weeks after training was complete.

**Language Development.** In addition to the benefitting phonemic and print awareness, storybook reading also has been shown to be an excellent context for oral language development (Burgess, Hecht, & Lonigan, 2002; Hoover, 2002; van Kleeck, 1998, 2003, 2006). During storybook reading parents provide scaffolded feedback to encourage their children to participate as they do during conversational speech activities (Snow, 1983). Initially, parents use concrete
language to supply labels or locate an object pictured in a book. Following the child’s lead or prompting interactions when the child does not respond extends this interaction. Parents may request imitations or semantically extend utterances to seek clarification or respond to a question asked. As reading becomes a more familiar activity and language development progresses, parents use increasingly abstract language to request or supply predictions or explanations. The parent can call upon the child’s prior knowledge to define unknown words by providing semantically similar words. Further, the parent can activate known concepts to challenge thinking as well as adjust their language to provide more links to abstract concepts (Snow & Ninio, 1986; Wheeler, 1983). The content, interaction strategies, and opportunities to read provided by the parent can lead to the introduction of higher levels of literate discourse (van Kleeck, 2006).

Children tend to match their parents amount of talk (Hart & Risley, 1999), therefore, repeated reading is critical to this process to allow children to gradually begin to talk about higher-level concepts as they become more comfortable with basic information. The more children participate in these literacy-based interactions, the more familiar they are becoming with their language skills thereby increasing their language development (DesJardin, Ambrose, & Eisenberg, 2009; van Kleeck, 2006). As illustrated by van Kleeck (1998), parents of 2-year-old children focus primarily on the meaning of words during storybook interactions, but by 3 or 4 years old more discussion resided in the print conventions while still maintaining focus on meaning. Therefore, a child’s interest, experience, knowledge, and ability to respond about a topic influence interaction during shared storybook reading (van Kleeck, 2006). However, for some children shared storybook experiences are not adequate to facilitate language development either due to low priority (Marvin & Mirenda, 1993), inadequate language interactions during

Language and literacy outcomes have been correlated to the amount of book sharing a child experiences (see Scarborough & Dobrich, 1994 for review). The time of exposure and level of language used during storybook interaction are part of the equation for future reading success. Children from low SES homes have fewer experiences with print (van Kleeck, 2006) and therefore are less language rich when entering school than their peers. One such empirical study utilized a dialogic reading intervention with 7 mother-child dyads from Head Start (Hockenberger, Goldstein, & Haas, 1999). Three children were classified as developmentally delayed while 4 were typically developing. Hockenberger, Goldstein, & Haas (1999) concluded after 6 weeks of observation that parents increased their number and level of comments related to the storybook, but during withdrawal phases parents decreased both the number and level of utterance. Not only did all parental commenting decrease, but the mothers of the developmentally delayed children lowered their utterances dramatically.

Young children with language impairments by definition have difficulties with language both at the literal and inferential level (Bradshaw, Hoffman, & Norris, 1998; Ford & Milosky, 2005; Lehrer & deBernard, 1987) leaving them at risk for both reading and comprehension difficulties (e.g., Catts et al., 2002). Intervention studies have shown that scaffolding language at varying levels can improve the inferential language abilities of preschoolers with language delays (Bradshaw, Hoffman, & Norris, 1998; Horstman & Vander Woude, 2007; van Kleeck, Vander Woude, & Hammett, 2006). van Kleeck and Vander Woude (2003) summarized studies that provide insight into parental behaviors during shared storybook reading with children with
language impairments. Much like the Hockenberger, Goldstein, & Haas (1999) study, van Kleeck and colleagues’ research suggests that parents of preschoolers who have language impairments make fewer comments and ask fewer questions that require inferencing during shared storybook activities (see van Kleeck, Vander Woude, & Hammet, 2006 for discussion). Also in support of Hockenberger, Goldstein, & Haas (1999)’s conclusions, van Kleeck and colleagues also suggest that parents of children with language impairments also do not increase their use of inferential language during storybook reading as their child’s language skills develop. These parental behaviors not only decrease language opportunities to increase spoken language, but also create a larger deficit in literacy development.

The use of inferential language is a stepping-stone to increase other linguistic competencies, such as developing mental representations necessary for prior knowledge to be incorporated into shared storybook activities. Ford and Molinsky (2005) compared the abilities of preschool and kindergarten aged children who were either typically developing or language impaired to infer emotions. Results of the Ford and Molinsky (2005) study suggest that language impaired children do not possess the ability to use mental representations during storybook reading to enable them to infer emotions. Recall the reading standards in kindergarten require students to ask/answer questions, draw inferences, interpret text using story grammar, and make a story to text relationship. The findings of the Ford and Molinsky (2005) study indicate that children with language impairment will begin school with a higher level language deficit compared to their typically developing peers.

**Instructional Language and CCSS**

Language is one of the most important variables in any classroom, especially for literacy learning. The language used by both teachers and students determines what is learned, the depth
of the learning, and how the learning takes place (Wilkinson & Silliman, 2000). Language is used to expose children to the forms and formats of literacy as books are shared and writing attempted. Through book reading, children are exposed to increasingly longer sentences with more dependent clauses, increasingly more complex meanings of language, both a broader range and increased depth of vocabulary, different discourse styles that overlap oral and written language, and the phonemes of oral language and their relationship to the graphemes of print (Catts & Kamhi, 1999). Variables that affect this learning include the function of the language, the communicative demands of the classroom, and individual differences in language competence and use among students. In addition to poor communication with peers and teachers, children who do not understand the unique communicative demands of the classroom such as extended focused listening, taking turns, and actively engaging in question-answer exchanges may learn very little from participation in classroom activities while their language competent peers easily acquire literacy and advance their language abilities (Silliman & Wilkinson, 1994).

The language of instruction has been extensively studied, with the primary conclusion that engaged students are motivated to learn. The social-linguistic interaction patterns adopted by the classroom teacher have a powerful effect, either enhancing or limiting learning for students across the developmental spectrum (Guthrie & Anderson, 1999). While direct instruction and explanations are important for helping children to understand and apply a new concept (Pressley & McCormick, 1995) it is equally important to guide children towards understanding by asking leading questions and providing corrective feedback when misunderstandings are apparent (Roehler & Cantlon, 1997).
The CCSS grade level standards reflect the important role of language for learning and school success, with language goals integral to all strands of learning across grade levels. The standards form a continuous spiral from kindergarten through grade 12, so that the same standard occurs at each grade level, but at a higher level of abstraction and with greater complexity. The English-Language Arts (ELA) Reading standards at the kindergarten level will be the focus of this paper, although language is critical to all content areas and is an integral part of those standards as well. The ELA standards are organized according to five strands, specifically Reading, Writing, Speaking and Listening, and Language, and we are addressing all but the writing standards because at the kindergarten level they do not include any specific language goals (i.e., use a combination of drawing, dictating, and writing to compose opinion pieces, informative/explanatory texts, and to narrate a single event). The language skills needed to accomplish these are profiled in other strands.

Each strand is headed by “Anchor Standards,” meaning they are the same across all grades and content areas and they follow the organization of the College and Career Readiness (CCR) standards. Across grade levels, they all have the same numbering system which refers to the CCR anchor standard, but written to be grade-appropriate. For example, the Reading Standards for Literature include Key Ideas and Details (standards 1-3), Craft and Structure (standards 4-6), Integration of Knowledge and Ideas (standards 7-9), and Range of Reading Level and Text Complexity (standard 10). The Reading Standards: Foundational Skills include Print Concepts, Phonological Awareness (Grades K and 1st), Phonics and Word Recognition, and Fluency (all grade levels). Phonics and Word Recognition skills were not included in our count of oral language goals although the speech-language pathologist is likely to address these written language skills because of a large body of research showing that phonemic awareness
skills are best learned in the context of print (National Reading Panel, 2000). The Speaking and Listening Standards include *Comprehension and Collaboration* and *Presentation of Knowledge and Ideas*. The Language Standards include *Conventions of Standard English*, *Knowledge of Language* (i.e., grammar which begins formally in 2nd grade), *Vocabulary Acquisition and Use*, and *Conventions of Standard English* (begins formally in 3rd grade). Once again, we identified oral language skills and omitted those directly related to print while recognizing the SLP would most likely use print to address the oral language goals. This resulted in 32 oral language goals for the kindergarten ELA standards (see Figure 1.2).

The language skills as presented on the CCSS are merely categorized by strand, and at first glance appear to have great diversity in the aims that the teacher and/or SLP are attempting to reach. They represent the instructional language used within the classroom which will have an emphasis on increasingly more complex explanations and questions that guide children to investigate materials or events, activate relevant background knowledge needed to infer meaning, and organize resulting insights (Sigel & Cocking, 1977). The sentences used will vary in syntactic structure, vocabulary, length of utterance, conceptual complexity, and fluency of expression. An SLP attempting to support classroom success by addressing the CCSS language standards would have the daunting task of trying to address dozens of different goals in 30 minute intervention sessions, or have limited effects by arbitrarily choosing two to four goals, which is the typical model of intervention in schools.

Moffett (1968) was among the first researchers to recognize that a simpler model was needed to unify the goals of instructional language. In his view, language is distorted when syntax, vocabulary, concepts, and form of expression are separated. Instead, he viewed language as a medium of communication, or a means by which the teacher and child exchange
Key Ideas and Details
1. With prompting and support, ask and answer questions about key details in a text.
2. With prompting and support, retell familiar stories, including key details.
3. With prompting and support, identify characters, settings, and major events in a story.

Craft and Structure
4. Ask and answer questions about unknown words in a text.

Integration of Knowledge and Ideas
7. With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g., what moment in a story an illustration depicts).
9. With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.

Phonological Awareness
2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
   a. Recognize and produce rhyming words.
   b. Count, pronounce, blend, and segment syllables in spoken words.
   c. Blend and segment onsets and rimes of single-syllable spoken words.
   d. Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words.∗ (This does not include CVCC ending with ll, ss, or zz.)
   e. Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.

Comprehension and Collaboration
2. Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
3. Ask and answer questions in order to seek help, get information, or clarify something that is not understood.

Presentation of Knowledge and Ideas
4. Describe familiar people, places, things, and events and, with prompting and support, provide additional detail.
5. Add drawings or other visual displays to descriptions as desired to provide additional detail.

Conventions of Standard English
1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
   a. Use frequently occurring nouns and verbs.
   b. Form regular plural nouns orally by adding /s/ or /es/ (e.g., dog, dogs; wish, wishes).
   c. Understand and use question words (interrogatives) (e.g., who, what, where, when, why, how).
   d. Use the most frequently occurring prepositions (e.g., to, from, in, out, on, off, for, of, by, with).
   e. Produce and expand complete sentences in shared language activities.

Vocabulary Acquition and Use
4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on kindergarten reading and content.
   a. Identify new meanings for familiar words and apply them accurately (e.g., knowing duck is a bird and learning the verb to duck).
   b. Use the most frequently occurring inflections and affixes (e.g., -ed, -s, re-, un-, pre-, -ful,-less) as a clue to the meaning of an unknown word.
5. With guidance and support from adults, explore word relationships and nuances in word meanings.
   a. Sort common objects into categories (e.g., shapes, foods) to gain a sense of the concepts the categories represent.
   b. Demonstrate understanding of frequently occurring verbs and adjectives by relating them to their opposites (antonyms).
   c. Identify real-life connections between words and their use (e.g., note places at school that are colorful).
   d. Distinguish shades of meaning among verbs describing the same general action (e.g., walk, march, stride, prance) by acting out the meanings.
   6. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.

Figure 1.2. Thirty-two Language Goals in the Kindergarten Standards of the CCSS

information. In his model, participants speak about a topic at a level of discussion. These levels of discussion reflect the degree of abstraction or decentering that exists between the experience and the language used to talk about the materials and events present within the experience. For example, a learner may talk about the experience while engaged in it, a level of abstraction he called Recording where language is part of the behavior within the ongoing event. At a higher level termed Reporting, the event is recounted and language is used to reference selective parts of the event from memory. Generalizing occurs as elements of an experienced event are used to
interpret or create unexperienced events, such as understanding a character’s actions and motives in a story or writing a creative story. Theorizing is Moffett’s highest level of abstraction in which reflection and evaluation occur. At this level language critically analyzes the event for motives, justifications, or lessons learned, and principles guide the talk.

The audience similarly must become more decentered, as children first are guided to exchange ideas with a teacher who is present within the experience, and gradually distanced to a hypothetical unknown audience where the talk demands greater explicitness. Moffett (1968, 1992) viewed the levels of abstraction in meaning and audience as developing along a continuum where, once constructed, a child could fluidly move between levels depending on the immediate demands of a task. Thus, within a single discussion the level of the discourse is likely to move up and down the continuum depending on the focus of the topic. Across time, instructional language would promote development that generalizes more broadly while at the same time elaborating to include finer details and more explicit wording. As an outcome of this process, instructional language would also function to promote syntactic development as increasingly longer sentences and more dependent clauses are gradually understood and eventually produced by the child to deal with these increasingly more demanding and intellectual exchanges.

Blank, Rose, and Berlin (1978) adapted the principles of Moffett’s model to accommodate the development of preschool-aged children. Like Moffett, their goal was to identify and systematize the language used to guide higher-level concept learning that occurs as a result of teacher-learner exchanges. These higher level conceptual skills include identifying attributes, associating like attributes, classifying, anticipating, and reasoning. They perceived the preschool classroom as a communicative situation in which the talk occurring between the teacher and child is designed to guide the children toward these concepts. They also
demonstrated a close relationship between the conceptual skills and the language formulations used to talk or ask questions to direct attention toward these features. For example, to prompt observing, questions like, “What do you see?” are used, while anticipating is likely to be expressed as a question in the form of “What will happen next?” Although recognizing the relationship is not one-to-one, to a large extent similar aims are represented using similar language formulations.

Because the actual sentences vary so widely in grammatical structure, Moffett’s principle of decentering, termed “perceptual-language distance” in the model by Blank et al. (1978) was used to classify sentences. In this model, an observation of an object can be questioned at increasing distances between the perception and the abstraction of the language. At the lowest level, there is a minimal distance between the language and the perception, as represented by questions such as, “What is that?” or “Is it a __?” Slightly greater distance is required to respond to the question “What is __ doing?” because thought must go beyond the object itself and focus on its action or function. As the distance between the perception and the language widens, the child can no longer simply perceive a single object but instead must abstract the important information from the material and the context. As the perceptual-language distance increases, the child is required to increasingly analyze and evaluate her perceptions which requires going beyond the specific information available at the moment.

Blank et al. (1978) divided their continuum into four levels of abstraction. The first, Matching Perception, represents minimal distance between the perception and the language, as in naming or providing a simple action description. Children begin to use language in this manner between the ages of two to three years. This first level enables perception to be mirrored or symbolized using words, and provides a foundation against which more abstract features
emerge. The second level of abstraction is Selective Analysis of Perception, which requires overriding the attraction to global perceptions in favor of selective attention to different aspects or features of a situation, also referred to as “attribution” by Donaldson and Wales (1970). Two conceptual demands are placed on children at this level. The first is to ignore the meaning and function of an object and instead attend to some feature or attribute, such as color, size, shape, or other perception. The other requires the child to select elements from a situation and group them into a unified idea. This might be a category (i.e., “Which one is an animal?” “How are these the same?”), a function (i.e., “Find something that can ___ [run]”), or a relationship such as spatial relationships (“Where is the ___?” --> “under the table.”) To make these judgments, the child must attend in a more detailed and controlled manner, but does not need to activate background knowledge or think beyond the perceptual information that is present. This ability emerges between three to four years of age.

The third level of abstraction is termed “Reordering Perception” and is cognitively far more challenging. It emerges from four to five years of age. At this stage, the sensorimotor perceptions that guided the first two levels must now be rejected and instead be internally manipulated to match the verbal command. Luria (1961) showed that younger children could not initially inhibit their response to a command containing the word “not” (i.e., “Do not push the button;” “Find the one that is not a dog”). When they hear the command, they are impelled to act. As the children were more able to attend to the language, the word “not” becomes the most important word in the sentence and overcomes the impulse to act. The language is no longer mirroring the perception or action of the materials but instead is controlling and reorganizing them to create a mental concept that is different from the actual perception. Other questions that fit this level include “What will happen next?”, “How do you think he feels?” or
“How do I make a sandwich?” In each case, one or more states or actions must be activated from background knowledge to recreate the past (i.e., making the sandwich), predicting the future, or viewing the situation from a perspective different from one’s own (i.e., “How do you think he feels?”). The fourth level of abstraction is termed Reasoning about Perception which demands that children think about what may, might, could or would happen to material. It typically develops and five years of age and beyond. This level requires children to not only activate background knowledge to interpret the language, but also to reflect on its implications and interpret their significance. Why questions typically fit this level, but also “What will happen if …?” (predicting changes), “What should we do now?” (solutions), “How did that happen?” (causes), “Why can’t we ___?” (justifying), or “How can we tell ___” (explanations).

A similar model was developed earlier by Monroe (1951) who discussed the relationship between the level of abstraction or quality of ideas and the level of language used to express them. While Blank et al. (1978) focused largely on the instructional language used by the teacher to guide language and concept development in the child, Monroe focused on the opposite perspective, or the language used by the child to understand experience. According to Monroe, a child who views an action scene in a picture as only a set of unrelated objects (i.e., There’s a girl, and a ball, and a big tree) will be more likely to use only low level language to name these objects. However, if the child sees connections between the objects (i.e., The girl threw the red ball so hard it bounced off of the tree and came back to her), the child’s language will reflect this higher level meaning through the use of adjectives, adverbs, verbs, prepositions, and conjunctions to express these relationships of meaning.

By attending to the quality of the ideas, teachers (or SLPs) can quickly gain insights regarding what and how a child thinks and feels through his use of language. Like Blank et al.,
(1978), Monroe proposed that a grammatical model of language has many limitations when evaluating quality of ideas. The sentence, “I can see a girl and over here is a red ball and the tree is big” has greater syntactic complexity but qualitatively doesn’t say any more than naming the three objects. To understand a child’s potential success in school, the quality of meaning is a more productive manner to evaluate the language. In her model, five levels of meaning were proposed to reflect increasingly more complex concepts. These five levels increase in abstraction, beginning with Naming, or merely enumerating objects in a picture (i.e., boy, baby, puppy, house; “It’s about a boy and a dog”); and Description which describes a quality (i.e., a funny little puppy) or action (i.e., the puppy is eating). These first two levels are roughly equivalent to Blank’s Matching Perception level. Monroe’s third level, Interpretation, or inferences about feelings and relationships (i.e., he feels sorry for the puppy; the puppy lives in the house) is roughly equivalent to Blank’s Selective Analysis of Perception. Level 4, Narrative Interpretation occurs when events immediately before or following a pictured event are inferred. The child is able to mentally sequence events in time for at least two steps (i.e., The boy looked outside and saw a puppy. It was hungry and he felt sorry for the puppy. He fed the puppy who ate all of the food). This level corresponds with Blank’s Reordering Perception. Level 5, Evaluative Interpretation occurs when the child provides a “moral” or draws conclusions (i.e., puppies don’t know any better but people do”), and corresponds to Blank’s Reasoning about Perception (Blank et al., 1978).

Arwood (1985) developed a set of pictures based on the criteria described by Monroe (1951) and a procedure for engaging a child in scaffolded interactions along Monroe’s continuum of levels from Labeling and Describing to higher levels. Scaffolded interactions (Bruner, 1978) occur when the adult supports the child’s ability to talk about material by
providing models, pointing to relevant visual cues, expanding and extending utterances produced by the child, and other prompts to help the child conceptualize new information and use language to refer to the visual concepts. Once ideas were conceptualized by the child at lower levels and the child is able to overlap the visual images with language, the same picture was again expanded and refined to include higher level ideas.

Norris and Hoffman (1993; 2005) expanded on Monroe’s model for the Semantic dimension of their three-dimensional model, the Situational-Discourse-Semantic (SDS) model. Each dimension has ten levels that emerge developmentally, but can also be used descriptively across the lifespan. The Situational Context refers to the level of representation of the event. The lowest level, Egocentered, refers to processing sensory input that directly impacts the child’s system. Representations become increasingly decentered from the body as objects are manipulated and assigned meaning, used for functional purposes at the Relational level, represented in pictures and play at the Symbolic level, and then represented with minimal props at the Contextualized Hypothetical level. This same progression from Egocentered through Hypothetical is repeated at the Decontextualized level, where all meaning is represented using language as in recounting a past event, reading a book unsupported by pictures, or talking about constructs such as a black hole. The second dimension of the SDS model, or Discourse, refers to the level of organization within the event. This ranges from isolated single actions or comments, though organization by topic, time, physical causality, psychological causality, reflection, and multiple episodes organized sequentially, in parallel, or interactively. Using these two continua, any event can be described according to the properties of the event and the level of organization. For example, the Situational Context of an illustrated storybook of The Three Bears is Contextualized/Symbolic because the symbolic pictures support the meaning of the words. The
Discourse Context is Compound because the story has multiple episodes that follow in sequence, each with their own problems and goals (i.e., Bears go for walk because porridge is too hot; Goldilocks is hungry; Goldilocks needs to sit; Goldilocks needs a nap; see Figure 1.3).

![Figure 1.3. SDS Profile of the Levels of Representation (Situational) and Organization (Discourse) of an Illustrated Storybook of The Three Bears.](image)

Each turn or idea expressed while telling the story would be profiled using the Semantic dimension. Norris and Hoffman (1993, 2000) expanded the five levels of meaning originally proposed by Monroe (1951) to include a continuum of ten levels. These range from involuntary reflexive reactions, to intentional points, and then use of words to represent a continuum of decentering from sensory perception. Specifically, the levels are:

**Level I:** Reactions refer *developmentally* to the reflexes that occur in response to sensory input in early infancy. Reactions may be used *descriptively* to refer to behaviors such as blinking, yawning, widening eyes and so forth that occur throughout the lifespan and provide insights into how well information is (or is not) forming meaningful concepts. Children who do not understand the instructional language used by the teacher may close their eyes, yawn, or idly twirl hair as a sign is disengagement or increasing stress.
Level II: Indication is intentional nonverbal behavior, such as a point, grab, or reach to initiate joint focus or make a request.

Level III: Naming refers to enumerating objects using a name or label.

Level IV: Describing refers to someone/something in an action relationship, time, or location.

Level V: Attribution which includes perceptual categories such as size, color, shape; emotional expressions such as a smile or frown, or other characteristics.

Level VI: Interpretations occur when cues are present in the environment but background knowledge must be used to assign meaning, as when a smile suggests something is making the character happy.

Level VII: Inferences require the use background knowledge to derive meaning not explicitly given or present in the situation.

Level VIII: Evaluations comment on the significance of the event or state and use background knowledge to evaluate or judge, requiring reflection and interpretation.

Level IX: Analogies make sense of something new by making a comparison to something known. This category also includes a wide range of nonliteral language such as understanding figurative language, similes, and metaphors.

Level X: At the highest level, Metalanguage, children are able to use language to conceptualize abstractions, such as phoneme-grapheme relationships or definitions.

With this paradigm, the 32 oral language goals of the CCSS can be examined for their potential congruence within the coherent continuum of semantic levels of displacement. Pages
from a kindergarten story from the Treasures series (Macmillian McGraw-Hill) will be used to illustrate this application of the model to the CCSS goals and curriculum used to achieve these goals. The text of the story reads, “Mama Cat has three kittens, Fluffy, Skinny, and Boris. When Mama Cat curls up to nap, Fluffy and Skinny Curl up to nap.” While the picture in the story shows a large black and white cat (the Mama) sitting in the grass and three smaller cats or kittens (one is black and white; one is black, orange, and white; and one is light and dark orange striped) sitting on the Mama cat in the grass with flowers, bugs, birds, and other wildlife around them.

The first strand of the CCSS is “Key ideas and Details.” At the kindergarten level, the goal is: “1. With prompting and support, ask and answer questions about key details in a text.” The answers to these potential questions correspond with Levels III (Naming) and IV (Attribution) of the SDS Semantic continuum, where names such as “Mama Cat,” “Fluffy,” and “Skinny” are enumerated and attributes such as being a “Mama” and perhaps “Fluffy” are specified in the text. Likewise, the next CCSS goal is: “2. With prompting and support, retell familiar stories, including key details.”

This information requires the addition of Level V information (Description) where actions or states such as “Has three kittens” or “curl up” are required, as well as Level VI (Interpretation) where children must use clues from the text and the picture to understand that the kittens stay close to Mama Cat and do what she does.

On the next page, the light and dark orange striped kitten is jumping through the tall grass. He is jumping over different color flowers, tall grass, and bugs. He appears to be jumping directly at a bug sitting on one blade of tall grass. The author writes, “But not Boris. He pounces.” The reader must draw an Inference (Level VII) that Boris sees a bug or lizard that he wants (i.e., character motivation), and make an Evaluation (Level VIII) consistent with story
grammar (i.e., Boris creates the plot problem when he doesn’t stick close to Mama Cat and instead goes off on his own, which is not a good idea; See Figure 1.5). These levels are consistent with the next CCSS goal: “3. With prompting and support, identify characters, settings, and major events in a story.”

Under Strand *Craft and Structure*, goal 4 reads: “Ask and answer questions about unknown words in a text.” This goal would require the children to Interpret (Level VI) the pouncing action of Boris as more goal oriented than mere jumping and with an intended prey as an outcome (Level VII, Inference). Similes would also be used (Level IX) to explain these concepts, as in “Boris pouncing on the bug is like you trying to grab the last cookie before your brother does … you pounce on the cookie.”

Level X (Metalanguage) is seen throughout the Phonological Awareness strand of CCSS, as well as skills such as usage of affixes, opposites, categories, or understanding shades of meaning that occur throughout other Strands. Engaging in literacy facilitating behaviors, such as asking children to point to words from left-to-right while reading, identifying words containing sounds in initial, medial and final word positions, and blending words can be integrated into book reading (van Kleeck, 1998; Whitehurst & Lonigan, 1998).

Many of the additional 32 language goals of the CCSS can be viewed as natural outcomes of discussing illustrated stories, such as five goals from Conventions of Standard English strand (i.e., using frequently occurring nouns and verbs, plurals, question words, frequently occurring prepositions, and complete sentences), or six goals from the Vocabulary Acquisition and Use strand (i.e., clarify meaning of unknown words, multiple meaning words, frequently occurring morphemes, real-life connections between words and uses, learning shades of meaning among verbs, using words and phrases learned in new contexts). That is, in order to
discuss a story along the SDS Semantic continuum, these conventions of language would necessarily be used with high frequency.

Using a semantic model for language intervention in kindergarten holds potential to address the language goals of the CCSS by engaging students in highly scaffolded talk across a continuum of increasingly more decentered meanings. To determine if a broad range of language skills can be improved using a focused, multilevel approach to storybook reading in kindergarten, the following questions were asked.

1. Will scaffolded talk along a continuum of semantic levels result in greater gains on the Semantic Composite of a standardized test compared to a control condition?

2. Will scaffolded talk along a continuum of semantic levels result in greater gains on the Syntactic Composite of a standardized test compared to a control condition?

3. Will scaffolded talk, including a metalinguistic task exploring words, words in sentences, and sounds in words result in greater literacy skills as measured by phoneme and print awareness tasks?

4. Will scaffolded talk without direct instruction targeting articulation result in greater changes compared to a control group?
METHODS

This study investigated whether using a focused, multilevel approach to storybook reading would improve a broad range of language skills for kindergarteners identified as at-risk for reading failure in kindergarten. Students either received a literacy-based intervention using multilevel linguistic input (intervention group) for 32 sessions or acted as members of a comparison group. All students completed pretest and posttest measures; students receiving intervention completed daily probes. Groups were compared for relative changes in gain scores.

Setting

The study took place in four Title I elementary schools in southeastern Louisiana that serve children primarily from low-income families. School A had a population of 372 students (Common Core Data, 2010-2011). Of the 372 students, 356 received free or reduced lunch. The racial profile of school A included 343 African Americans, 27 European Americans, 1 Asian American, and 1 American Indian. School B had a population of 501 students, 461 of which qualify for free or reduced lunch. The racial profile of school B included 464 African Americans, 36 European Americans, and 1 Asian American. School C had a population of 432 students with 406 students qualifying for free or reduced lunch prices. The racial profile of school C included 266 African Americans, 130 European Americans, and 36 Asian Americans. School D had a population of 460 students of which 394 qualify for free or reduced lunch. The racial profile of school D included 364 African Americans, 88 European Americans, and 7 Asian Americans. School demographics profiled in Table 2.1.

Participants

The participants included five school-based SLPs who implemented the intervention, five university students participating in a screening clinic who administered assessments, and 40
kindergarten students from the four inner city schools. Classroom teachers sent consent forms home with all students enrolled in their classes. In accordance with the Institutional Review Board procedures, only kindergarten students whose parents returned signed consent forms were considered for participation in this study.

**School-based SLPs.** Five SLPs were recruited for this study. Interventionists’ experience in school-based practice ranged from 2-30 years. Three of the five SLPs held their certificate of clinical competence (CCCs) from the American Speech-Language Hearing Association. Four of the interventionists held a Master’s degree in the area of speech-language pathology; one interventionist held a Bachelor’s degree. All interventionists reported they had provided literacy-based interventions prior to participating in this study. The SLPs’ description is profiled in Table 2.2.

**Assessment Team.** Seven female SLPs volunteered to administer pre- and posttest measures. The assessment team consisted of two undergraduate seniors, two master students, and two Ph.D. students from Louisiana State University’s Communication Sciences and Disorders program; one administrator had obtained her Ph.D. in Communication Sciences and

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### Table 2.1 School Demographics

<table>
<thead>
<tr>
<th>School</th>
<th>Students Enrolled</th>
<th>African American N (%)</th>
<th>European American N (%)</th>
<th>Asian American N (%)</th>
<th>American Indian N (%)</th>
<th>Eligible for Free/Reduced Lunch N (%)</th>
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<tr>
<td>A</td>
<td>372</td>
<td>343 (92.2%)</td>
<td>27 (7.3%)</td>
<td>1 (.003%)</td>
<td>1 (.003%)</td>
<td>356 (96.7%)</td>
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<tr>
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<td>501</td>
<td>464 (92.6%)</td>
<td>36 (7.2%)</td>
<td>1 (.002%)</td>
<td>0 (0%)</td>
<td>461 (92.0%)</td>
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<tr>
<td>C</td>
<td>432</td>
<td>266 (61.6%)</td>
<td>130 (30.1%)</td>
<td>36 (8.3%)</td>
<td>0 (0%)</td>
<td>406 (94%)</td>
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<tr>
<td>D</td>
<td>460</td>
<td>364 (79.1%)</td>
<td>88 (19.1%)</td>
<td>7 (1.5%)</td>
<td>0 (0%)</td>
<td>394 (85.7%)</td>
</tr>
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Table 2.2 Speech-Language Pathologists’ Profiles

<table>
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<tr>
<th>SLP</th>
<th>Facility</th>
<th>Years School Experience</th>
<th>CCCs</th>
<th>Highest Degree Held</th>
<th>Use Literacy Interventions</th>
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<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>13</td>
<td>Yes</td>
<td>M.A.</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
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<td>2</td>
<td>No/CFY</td>
<td>M.A.</td>
<td>Yes</td>
</tr>
<tr>
<td>3</td>
<td>B</td>
<td>10</td>
<td>Yes</td>
<td>M.A.</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
<td>24.5</td>
<td>Yes</td>
<td>M.A.</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>D</td>
<td>30</td>
<td>No</td>
<td>B.A.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Disorders (see Table 2.3 for profile). Prior to test administration, each member of the assessment team participated in a training course. The training phase lasted 2 sessions for approximately one hour. Each member of the assessment team was provided a testing packet that included a manual for each assessment, example assessment protocols (blank and filled out). During these 2 training sessions, each member of the assessment team practiced test administration with another member of the team and reviewed the assessment manuals and procedures with a certified SLP present to answer questions and provide direct feedback. At the end of the training session, each member of the assessment team scored the assessment for the certified SLP present to answer questions and provide immediate feedback. Additionally, each member of the assessment team completed the National Institutes of Health Web-based training course Protecting Human Research Participants prior to the beginning of the study.

**Kindergarten Participants.** Forty participants were kindergarten students who were either receiving speech-language services through an Individual Education Plan (IEP) or performed below the sixteenth percentile on the kindergarten screening measure (i.e., Developing Skills Checklist [DSC, CTB/McGraw-Hill, 1990]). Guardians of all participants immediately returned signed letters of consent approved by the LSU Institutional Review Board for intervention.
Table 2.3: Assessment Team Profile

<table>
<thead>
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<th>Assessor</th>
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</table>

and video recording (See Appendix A). Socioeconomic status was determined by eligibility to receive free or reduced lunch; all of the students received free or reduced lunch. All participants spoke English as their primary language at home and the school screening revealed normal hearing for all participants. Three sets of children were siblings, one set of twins in the intervention condition and two sibling pairs with one member in intervention and one in comparison group.

Participant Selection

Intervention group. Twelve students who were receiving speech-language services from the school-based SLP for an Individual Education Plan (IEP; N = 9) or interventions (N = 3) were automatically included in the study in the intervention condition. Additionally, eight students performing below the sixteenth percentile on the DSC were also included in the intervention condition (see Table 2.4). Six of these students were repeating kindergarten. The intervention group ranged in age from 5 years, 4 months to 7 years, 2 months (M = 6;1; SD =
and included nine females and 11 males. The intervention group included 19 African American children and one Hispanic child.

Table 2.4: Demographic Characteristics of Intervention Group

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Note. Sub = Subject; CA = Chronological Age (years; months); SES = Socio-economic Status; AA = African American; H = Hispanic; IEP = Individual Educational Plan; INT = Speech Interventions; Lang = Language Subtest; A = Articulation; F = Fluency; L = Language; Mem = Memory Subtest; Aud = Auditory Subtest; PC = Print Concepts Subtest; NA = Not Administered; ##* = Student dropped from study

**Comparison group.** The comparison participants were 20 students performing below the sixteenth percentile on the DSC (see Table 2.5). The students in the comparison group
ranged from 5 years, 3 months to 6 years, 7 months \((M = 5;8 ; SD = 0.39)\). None of these participants were repeating kindergarten. The comparison group consisted of eight females and males.

**Table 2.5: Demographic Characteristics of Comparison Group**

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Note. Sub = Subject; CA= Chronological Age (years; months); SES = Socio-economical Status; AA = African American; H = Hispanic; IEP = Individual Educational Plan; INT = Speech Interventions; Lang = Language Subtest; A = Articulation; F = Fluency; L = Language; Mem = Memory Subtest; Aud = Auditory Subtest; PC = Print Concepts Subtest; NA = Not Administered; ** = Student dropped from study

34
12 males; 18 African American children and two European American children. During the course of the intervention, two comparison participants transferred to different schools resulting in 18 comparison participants. There was no significant difference in age between the groups, $t(38) = 1.99, p = .05$.

During the course of intervention, two participants in the intervention group (participants 18 & 20) transferred to a different school. Therefore, results were analyzed for the resulting 18 intervention participants with the same age range ($M = 6;1$ ; $SD = 0.69$); seven females and 11 males; and 17 African American children and one Hispanic child. Additionally, during the course of intervention, two comparison participants (participants 28 & 26) also transferred to different schools resulting in 18 comparison participants. Therefore, the comparison group during analysis comprised of eight females and ten males; 16 African American children and two European American children; ages ranged from 5 years, 3 months to 6 years, 2 months ($M = 5;7$ ; $SD = 0.35$). With the loss of these four students, there is a significant difference in age between groups, $t(36) = 2.347, p = .027$.

Students whose scores based on classroom, school, state, district, or national norms are dramatically below that of peers are considered to be at-risk for reading failure (Davis, Lindo, & Compton, 2007). During the intervention, 24 of the participants were also identified by school personnel as at-risk for reading failure due to performance on academic measures; ten participants in the intervention group and 14 of the participants in the comparison group (see Tables 2.4 and 2.5; RtI). These students participated in Tiered interventions for either moderate group instruction for 30 minutes once weekly (Tier 2 interventions) or intensive instruction individually for 30 minutes twice weekly (Tier 3 interventions).
The experimenter put all children receiving services by the SLP into the intervention group (N=12). The remaining 28 students were assigned to either the intervention or comparison group. Participants were matched on as many values as possible on the Test of Language Development: Primary Fourth Edition (TOLD: P4; see Assessment Battery pg. 38). First, students’ profiles who closely matched the children receiving services by the SLP were put into the comparison group; then the remaining students were put into either the intervention group or comparison group based on matching profile. This procedure was done to insure that each condition was weighted equally.

Recall that four of the participants transferred to different schools after the intervention began. Two participants in the intervention group were dropped from the study due to excessive school absences and school transfers; two participants in the comparison group were dropped from the study as they transferred to new schools. The pretest scaled scores for the remaining 36 participants’ performance for the subtests of the TOLD: P4 are organized by intervention (Table 2.6) and comparison groups (Table 2.7).

**Pre-intervention Analysis**

A multivariate analysis of variance (MANOVA) was conducted at pretest to determine if the intervention and comparison groups were similar before intervention began. Results of the MANOVA indicated a significant difference between groups, Wilks’s Lambda = .367, $F(9, 26) = 4.99, p = .001$. Analyses of variance (ANOVA) for each subtest were conducted as follow-up tests to the MANOVA to detect group differences (Table 2.8). The ANOVAs for subtests of the TOLD: P4 indicated significant differences between groups for the Morphological Comprehension and Word Articulation subtests.
Assessment Instruments

**Developing Skills Checklist (DSC).** The DSC (CTB/McGraw-Hill, 1990) is comprised of six subtests: Mathematical Concepts and Operations, Language, Memory, Visual, Auditory, and Print Concepts. Four of the subtests were considered language-based and used to identify potential participants.

Table 2.6 Intervention Group Language Profile as Indicated by Scaled Scores on the TOLD:P4 at Pretest

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Means (SD) 7.17 (2.71) 5.00 (2.61) 5.06 (3.57) 5.67 (2.14) 6.22 (2.67) 4.72 (2.30) 5.33 (3.82) 4.22 (4.08) 5.83 (2.36)

Notes. Sub = Subject; PV = Picture Vocabulary; RV = Relational Vocabulary; OV = Oral Vocabulary; SU = Syntactic Understanding; SI = Sentence Imitation; MC = Morphological Completion; WD = Word Discrimination; PA = Phonemic Analysis; WA = Word Articulation; ### = Children receiving services via SLP
Language: Items include body parts, naming objects, prepositions, story sequencing, and opposites

Auditory: same/different words, sentence and word segmenting, rhyme

Memory: recall, following directions, naming letters, letter-sounds, sound blending

Print Concept: book handling, function of print, letters and pictures

Table 2.7: Comparison Group Language Profile as Indicated by Scaled Scores on the TOLD: P4 at Pretest

<table>
<thead>
<tr>
<th>Sub</th>
<th>PV</th>
<th>RV</th>
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Means (SD) 7.11 (1.81) 5.39 (2.81) 7.11 (2.81) 6.06 (3.88) 7.83 (3.33) 6.67 (2.64) 5.39 (2.25) 4.17 (3.15) 8.67 (2.12) 8.67 (1.50)

Notes. Sub = Subject; PV = Picture Vocabulary; RV = Relational Vocabulary; OV = Oral Vocabulary; SU = Syntactic Understanding; SI = Sentence Imitation; MC = Morphological Completion; WD = Word Discrimination; PA = Phonemic Analysis; WA = Word Articulation; ### = Children receiving services via SLP
Table 2.8 ANOVA Results at Pretest for 18-Intervention and 18-Comparison Students Scores on the Subtests of the TOLD:P4

<table>
<thead>
<tr>
<th>TOLD: P4 Subtest</th>
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<th>Sig.</th>
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<tr>
<td>Picture Vocabulary (PV)</td>
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<tr>
<td>Relational Vocabulary (RV)</td>
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<td>Oral Vocabulary (OV)</td>
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<td>Syntactic Understanding (SU)</td>
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<tr>
<td>Morphological Comprehension (MC)</td>
<td>6.59</td>
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<tr>
<td>Word Discrimination (WD)</td>
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<td>0.96</td>
</tr>
<tr>
<td>Phonemic Analysis (PA)</td>
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<td>0.96</td>
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<tr>
<td>Word Articulation (WA)</td>
<td>18.54</td>
<td>0.00*</td>
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Note. * indicates significant results

Test of Language Development: Primary Fourth Edition (TOLD:P4). The TOLD:P4 (Hammer & Newcomer, 2008) is a test of spoken language that identifies language proficiency in children between 4;0 and 17;11 years of age. All nine subtests were given including three measuring vocabulary, three measuring grammatical elements, and three phonology.

Each item for the subtests of the TOLD:P4 were reviewed in an item analysis to assess the complexity of test items. Consistent with procedures for test construction with basals and ceilings, the items on each subtest are organized from easiest to most difficult. Examination of individual items reveals that this results in increased perceptual-language distance within and across subtests, consistent with the premises of Blank et al. (1978) and Norris and Hoffman (1993). For example, the first items on the Picture Vocabulary subtest require participants to select concrete nouns from a choice of four (i.e., pencil, mirror, and mouse). This task represents minimal perceptual-language distance from the pictured object to the word (Blank’s level I; SDS level III). However, by item 7 (i.e., afloat, tray, explosive) the functions of the pictured objects must be considered (Blank’s level II) because a boat and water, for example, are the concrete
objects pictured and the floating function of boats is interpreted from the picture (SDS level VI). By item 15, background knowledge beyond everyday experiences must be used (Blank’s level III; SDS level VII) to recognize monument, emerald, salmon, or surgeon because first order words for these pictures (Zipf’s Law, 1935) would be statue, ring, fish, and doctor. Items 32-33 require evaluations of pictured scenes (Blank’s highest level 4; SDS level (VIII). The final item, 34, is representative of SDS level X, where velocity is learned about through abstract definitions and calculations, and is not part of the airplane pictured except by analogy (SDS level IX).

Subtest 1: Picture Vocabulary (PV) – measures understanding of spoken words.

Interviewer (I): “Point to ___” (child [C] responds by pointing to picture from a choice of 4)

Subtest 2: Relational Vocabulary (RV) – measures ability to understand and orally express relationships between two spoken words.

I: “How are a pen and pencil alike?” C: “They are something you write with.”

This subtest begins with Blank’s level II, SDS level V with distinctly different items that have the same primary function (i.e., birds and kites fly; a couch and a chair are for sitting). By item 6 (SDS Level VI), a higher order category must be derived from to subordinate exemplars (a rose and a daisy are flowers; a penny and dime are coins) and lower level responses (both plants; both smell; made of medal) are not accepted. By item 13, more background knowledge is required from an answer (i.e., a jacket and sweater are both clothing to keep you warm; outer garments, but not clothing; faucet and spigot control/release fluids), SDS level VIII. Item 34 requires meta-knowledge (SDS level X) of scientific categories to know a lobster and crab are both crustaceans (sea animals, shellfish, seafood, and claws are not accepted).
Subtest 3: Oral Vocabulary (OV) – measures ability to give oral definitions. No pictures are used.

I: “What is an apple?” C: “a fruit” or “grows on tree and get juice from it”

This subtest begins with Blank’s level II, SDS level VI with definitions that require functions of objects (i.e., wear a hat, sit in a chair). By item 11, two defining characteristics must be given (i.e., a bird has feathers and builds’ nests). By 15, considerable background information is expected (Level VII) (i.e., an ocean is a body of saltwater, can be surfed). Item 24 must be explained by analogy (Level IX) (sad is like being depressed, unhappy; or can give specific situations in which sadness occurs.) Item 34 requires meta-reflection (Level X) on a situation to determine the meaning of true.

Subtest 4: Syntactic Understanding (SU) – measures ability to comprehend sentence meaning. Child must select from 3 pictures the one that most accurately represents the stimulus sentence.

I: “The man had ridden a horse.” C: Picks the past tense picture.

This subtest begins with Blank’s level II, SDS level V-VI where attributes must be attended to (quickly, smallest) or meaning interpreted from context (they sat up and listened although no source of sound is depicted). By item 20, inferences are required (Level VII) (because he had already finished his work, he was not kept after school; and evaluations were required by 28 (If the man had not found the lady’s handbag, he would not have gone to the police station). In the higher-level sentences, the most important words needed to correctly interpret meaning were neither/nor or if.
Subtest 5: Sentence Imitation (SI) – measures child’s ability to imitate English sentences. The child must repeat the sentence exactly as modeled, including morphemes. (no repetitions of stimuli)

Subtest 6: Morphological Completion (MC) – measures ability to recognize, understand, and use common morphological forms. Cloze technique is used. The examiner reads an unfinished sentence and the child must provide the missing forms.

I: “Denise has a dress. Paula has a dress.” C: They have two _____ (dresses).

Subtest 7: Word Discrimination (WD) – measures child’s ability to recognize the differences in significant speech sounds. The child determines if two words said orally by examiner are the “same” or “different.” The two words differ by only one phoneme in the initial, medial, or final position.

Subtest 8: Phonemic Analysis (PA) – measures child’s ability to segment words into smaller phonemic units.

I: “Say ‘apartment.’” C: “apartment”

I: “Now say it again, but don’t say ‘ment.’” C: “apart”

Subtest 9: Word Articulation (WA) – measures child’s ability to spontaneously say important speech sounds by naming pictures using cloze procedure.

I: Displaying a picture, “He sentences the robber to jail. He is the ___.”

C: “Judge”

**The Phonological Awareness Test- Second Edition (TPAT2).** The TPAT2 (Robertson & Salter, 2007) is a standardized test to measure child’s phonological awareness, phoneme-grapheme correspondences, and decoding skills in children ages 5-9. The segmentation subtest was administered.
Segmentation Subtest – measures awareness of the number of words in sentences, syllables in words, and phonemes in words.

**Letter Identification Assessment.** The Letter Identification Assessment (Wright Group Publishing, Inc., 1996) provides information about the child’s knowledge of upper- and lowercase letters, as well as letter-sound relationships. Students are presented with upper- and lowercase black-and-white letters on an 8.5” X 11” sheet of paper. Examiner marks correct and incorrect productions on a score sheet.

**Materials**

**Semantic Board.** The Semantic Board (Norris, 2005) consisted of ten 2” x 2”stickers and a title affixed to a 24” poplar wood craft board that SLPs could hold during discussions and cue appropriate levels of talk. The stickers were icons representing ten levels of response, ranging from indications such as an eye gaze through points, labels, descriptions, interpretations, evaluations and metalinguistic comments. A clothespin or plastic clip could be moved to higher levels as the talk increased in complexity (Appendix B).

**Treasures: A Reading/Language-Arts Program Big Books (Treasures).** Treasures (Macmillian McGraw-Hill) big books is a commercially available for elementary schools. The kindergarten Treasures big books were borrowed from the classroom to coincide with the teacher’s current lesson were used to elicit talk across the semantic levels, as well as design the SDS lesson plans below.

**SDS Lesson Plans.** Each Treasures big book was used to generate two lesson plans for the SLP’s intervention. One lesson plan focused on a picture or a 2-page picture sequence from the big book. Each plan gave suggestions for talk that should occur at each semantic level profiled on the Semantic Board. For example, Label (name the cat, tiger, and girl), Description
(What is the girl doing? Where is the cat?), Attribution (What color is the cat? How does the girl feel?) and so on (see Appendix C for example). A total of 32 intervention lesson plans plus a model plan were generated.

**MorphoPhonic Face Cards.** Morphophonics Face cards (Norris, 2005) consist of 2-inch by 2-inch full-color cards depicting a word (See Figure 2.1). For each word, a Phonic Face is shown producing the first sound and the meaning of the word is drawn into the remaining letters of the written word. The card provides multisensory cues to written words, including speech production, meaning, and alphabetic form.

![Figure 2.1. Examples of MorphoPhonic Face Cards](image)

**Procedures**

The university students administered the complete assessment battery two weeks prior to the beginning of intervention as well as two weeks after the completion of intervention.

**SDS Intervention.** After students were assigned to either the intervention or comparison group, the students in the intervention group were provided intervention by the SLP twice weekly for 30 minutes ranging from 27-32 sessions over approximately 18 weeks. Absences, school vacations and other interruptions that cancelled a session were made up when the clinician’s schedule permitted. The interventions were implemented in the SLP’s room or in a quiet corner table of the kindergarten classroom.

First, the SLP showed the book cover for the book used in lesson at the time of intervention and read the title of the book. Then using the lesson plan, she commented on the theme (“This book shows how two friends like the same things even though there are real
The SLP then opened the big book to the relevant page, presented the Semantic Board, let one child place the clip near the Label sticker, and then invited participants to name as many things as they could in the picture. The SLP repeated many of their responses and frequently recast them for correct articulation. After approximately one minute, a different child moved the clip to the Description sticker, and the SLP asked them to talk about actions (“What is the boy doing?”). Prompts and scaffolding were provided to assist responses (“The boy is ____ the ____”; “What is the boy washing?”). This procedure was followed for each level of talk along the Semantic continuum represented by the stickers affixed to the board.

At level ten, the Metalinguistic level of the Semantic Board, the focus switched to developing a concept of wordness and letter-sound association. One or two sentences (i.e., “I like my cat”) from the big book (or a simplification of a sentence) were presented to children using MorphoPhonic Face cards. The children then took turns recreating the sentence using the MorphoPhonic cards and producing the first sound of each word using the Phonic Face cue.

**SLP Training.** The five SLPs implementing the interventions participated in two training sessions. The first occurred one week prior to the beginning of intervention. The SLPs had been provided a copy of the SDS lesson plan to preview prior to the training session. The experimenter visited the school and modeled an example lesson with the SLP’s participating children while the SLP followed along with a copy of the lesson plan. The purpose of each step of the intervention and the materials to be used were explained and then the interactions with the children were modeled. The experimenter commented on children’s responses and any behaviors considered important to correct implementation. After modeling a step, the SLP was then asked to try the intervention procedure and was provided acknowledgement for correct implementation, or corrective feedback and further modeling if needed.
Prior to the second training session, SLPs were directed to watch a video of the implementation of the intervention posted on YouTube (http://www.youtube.com/watch?v=73tR65jtzEA). The video remained posted and could be revisited as needed.

The second training occurred during the first week of intervention. The experimenter coached the SLP throughout the intervention with prompts such as, “Remember in step one to use the clip on the Semantic Board to identify the level of talk and then ask children to name things they see in the picture.” As before, acknowledgement was provided for correct implementation, or corrective feedback and further modeling was given if needed.

In subsequent weeks, the SLPs were visited once every 2-4 sessions and observed using a fidelity checklist (Appendix C). If errors in implementation were seen, corrective feedback and further modeling were provided.

Fidelity and Reliability

**Treatment fidelity.** During the first two sessions each SLP led, the entire 30-minute session for each SLP was observed and immediate feedback was provided. Modeling and corrective feedback was minimally required; few deviations were noted from scripted intervention procedures during these observations. As SLPs became more familiar with procedures as indicated by 100% adherence to the fidelity measure, subsequent session were randomly observed by the investigator for a minimum of 10 minutes. A checklist of the intervention procedures was created to assure that the intervention was implemented with fidelity (Appendix D). Fidelity checklists were photocopied and shared with SLP before the next session to reinforce intervention procedures. Interventionists’ ratings showed that procedures were followed with 94% accuracy. Additionally, two randomly recorded sessions were presented to
two individuals blind to the purpose of the study. Fidelity checklists were completed by these two people deriving at 96% percent adherence to prescribed procedures.

**Data Reliability.** Members of the assessment team initially scored the assessments given at pre- and posttest. All scoring was checked for accuracy by volunteer undergraduates blind to the purpose of the study. The interscorer reliability for the tests were: TOLD-P4 99%, TPAT2 Segmentation 99%, and Letter Awareness 100%. Undergraduate volunteers also entered all assessment and probe measures into a spreadsheet. Each data entry point was also assessed by undergraduate volunteers. Interscorer reliability for data entry was: Pretest measures 97%, probes 99%, and posttest measures 98%.

**Research Design and Data Analysis**

The current study utilized a two group experimental design in which groups were determined based on the school-based SLPs caseload and students’ performance on language measures that indicate at-risk for reading. Participants were automatically assigned to the intervention group based on receiving intervention services; but all other participants were randomly assigned, then matched to either group. Dependent variables in the current study included overall language skills, syntax, semantics, letter knowledge, and articulation. Data were analyzed using multiple statistical analyses and visual inspection.

Multiple 2 x 5 x 2 Mixed ANOVAs, one-way ANOVAs, and t-tests were used to measure the progress made by the intervention and comparison groups and if the groups differed significantly on the dependent variables. Visual inspection (i.e., scatterplots, tables, line graphs) was used to compare each group’s performance on the dependent variables.

Finally, effect size (i.e., partial eta squared [$\eta_p^2$]) was calculated for each ANOVA to determine the difference between the intervention and comparison group at the conclusion of the
study. The various statistical analyses performed revealed whether the intervention and comparison groups’ performance on dependent variables was statistically significant, effect sizes reveal whether the implemented intervention produced a clinical significance. The following recommendation is recommended for interpretation of effect sizes: .2-small effect, .5-medium effect, and .8-large effect (Cohen, 1988).
RESULTS

The purpose of this study was to determine if the broad range of language skills profiled by the kindergarten ELA standards of the CCSS can be improved for students with language deficits using scaffolded talk along a continuum of semantic levels to talk about a picture. Gain scores following 12 weeks of intervention were used to determine which aspects of language showed positive change as well as limitations to this approach.

Overall Language Changes

The Test of Language Development: Primary Fourth Edition (TOLD:P4) results in individual subtest scores as well as composites. The Spoken Language composite combines the scores from six subtests, including three measures of semantics and three measures of syntax. The TOLD:P4 composite scores have a mean of 100 and a standard deviation of 15. Table 3.1 profiles the Spoken Language composite scores for each of the five SLPs as well as the Total of all groups. Examination of each of the SLPs’ groups that comprised of 3-4 students shows that three of the SLPs’ groups (1a, 3b, 5d) made greater than one standard deviation of change following treatment. One of the three (5d) made two standard deviations in change and a fourth group (4c) made nearly one standard deviation. Only one group (2a) made small changes. The gain scores for four of the SLP groups were clinically significant, improved ratings from poor to average for three and poor to below average for a fourth group. In contrast, for the comparison group only moderate gains were seen for participants in two SLP groups (1a and 2a) while decreases in performance were attained by 3b and 4c. Only one group approached a standard deviation in change (i.e., 13.34), resulting in a rating change from poor/very poor to below average.
Table 3.1  Comparison of Pretest, Posttest, and Gain Scores for Intervention and Comparison Groups by SLP and Total Group Averages for Spoken Language Composite on TOLD:P4

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<tr>
<th>SLP</th>
<th>Intervention Group</th>
<th></th>
<th>Comparison Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
<td>Gain</td>
<td>Pretest</td>
</tr>
<tr>
<td>1a</td>
<td>71.00</td>
<td>10.10</td>
<td>91.00</td>
<td>91.87</td>
</tr>
<tr>
<td>2a</td>
<td>72.75</td>
<td>13.77</td>
<td>77.00</td>
<td>77.00</td>
</tr>
<tr>
<td>3b</td>
<td>57.75</td>
<td>8.66</td>
<td>77.00</td>
<td>77.00</td>
</tr>
<tr>
<td>4c</td>
<td>78.00</td>
<td>19.68</td>
<td>92.50</td>
<td>92.50</td>
</tr>
<tr>
<td>5d</td>
<td>74.00</td>
<td>0.00</td>
<td>108.50</td>
<td>108.50</td>
</tr>
<tr>
<td>Total</td>
<td>70.33</td>
<td>13.68</td>
<td>85.75</td>
<td>85.75</td>
</tr>
</tbody>
</table>

Figure 3.1 profiles the average total composite pretest and posttest scores for the intervention and comparison groups. The intervention group increased from 70.33 to 85.75, while the comparison group scores increased from 76.76 to 80.71. This resulted in a mean gain for the total intervention group of 19.45 representing a standard deviation of change, compared to 3.95 for the comparison group. The total gain score for the intervention group represented a clinically significant change, from a classification of poor on the TOLD:P4 to below average.

Figure 3.1  Spoken Language Gains on the TOLD:P4 Made by the Intervention and Comparison Groups
To determine if the group differences were reliable, data were analyzed in a 2 Treatment Condition by 5 Speech-Language Pathologist by 2 Times of Measurement Mixed Model ANOVA. Mauchly’s Test of the sphericity assumption was not significant and therefore uncorrected F statistics were used in the analysis. There was a significant interaction effect for Time by Treatment Condition, $F(1,25) = 10.64, p < .003, \eta^2_p = .298$, indicating that the intervention accounted for 29.8% of the variance in score gains from pretest to posttest. There was also a significant interaction effect for Time by SLP, $F(4,25)=3.178, p < .031, \eta^2_p=.337$, indicating that the SLP contributed 33.7% of the variance in gain scores. The results indicated that gains were affected by intervention as well as the individual SLP.

One goal of the intervention was to improve language abilities to a level sufficient to support the goals of the CCSS. We defined this as within 1 standard deviation from the mean. Figures 3.2 and 3.3 illustrate a scatterplot of the posttest scores as a function of pretest scores for the Spoken Language composite of the TOLD:P4. The first panel shows the results for the intervention group (Figure 3.2). Looking from left to right it can be seen that 3 of the 18 participants scored at or above 85 at pretest; looking from top to bottom, it can be seen that these 3 participants increased their scores and 6 more participants gained to score above 85. Among the comparison group participants 6 of 17 participants scored above 85 at pretest (Figure 3.3); at posttest 5 of these participants had fallen below 85. Four participants who were below 85 at pretest rose to above 85, for a total of 5 participants above 85 at posttest. The results show that twice as many participants performed in the average range following the intervention.

**Semantic Composite**

Three measures of semantics are obtained from the TOLD:P4, including Picture Vocabulary, Relational Vocabulary, and Oral Vocabulary. Scores distributed from lower to
higher represent progressively more abstract concepts, or distance between the perception and the language used to talk about it. Examination of Table 3.2 reveals that both intervention and comparison groups responded to approximately 13 of the Picture Vocabulary items at pretest, requiring participants to consider the function of pictured items (Level VI). At posttest, the
Table 3.2 Pretest and Posttest Raw Scores, Means, and Standard Deviations for Picture Vocabulary, Relational Vocabulary, and Oral Vocabulary Subtests of the TOLD:P4.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean</th>
<th>Gain</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean</th>
<th>Gain</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int</td>
<td>13.11 (3.60)</td>
<td>18.61 (4.12)</td>
<td>5.50</td>
<td>5.00</td>
<td>4.78 (4.26)</td>
<td>10.00 (6.42)</td>
<td>5.22</td>
<td>5.22</td>
<td>9.33 (7.32)</td>
<td>15.78 (7.33)</td>
<td>6.44</td>
<td></td>
</tr>
<tr>
<td>Comp</td>
<td>12.56 (3.07)</td>
<td>14.72 (3.32)</td>
<td>2.17</td>
<td>2.17</td>
<td>4.61 (4.68)</td>
<td>9.56 (5.44)</td>
<td>4.94</td>
<td>4.94</td>
<td>12.89 (8.17)</td>
<td>14.00 (4.80)</td>
<td>1.11</td>
<td></td>
</tr>
</tbody>
</table>

Note. Int = Intervention; Comp = Comparison

Mean score of 18 for the intervention group required greater background knowledge (Level VII), a level not attained by the comparison group. For Relational Vocabulary, both groups were able to recognize the functions of everyday objects (Level V), and both increased their understanding to include subordinating categories (Level VI). For Oral Vocabulary (i.e., defining words) both groups were able to give functional definitions, although the comparison group could include two or more defining characteristics compared to one for the intervention group. At posttest, the intervention group was able to access more background knowledge to use defining terms at Level VII. For all three semantic subtests, the gains were greater for the intervention group.

The Semantic composite combines the scores from the three semantic subtests. Table 3.3 profiles the Semantic composite scores for each of the five SLPs as well as the Total of all groups. Examination of the groups by SLPs shows that three of the intervention groups (1a, 3b, 5d) made greater than one standard deviation of change following treatment. One of the three (5d) made two standard deviations in change and a fourth group (4c) made nearly one standard deviation. Only one group (2a) made small changes. The gain scores for four of the SLP groups were clinically significant, improved ratings from poor to below average/average for two, very poor to below average for one, and below average to average for a fourth. In contrast, for the comparison group only moderate gains were seen in two participants (1a and 2a) while decreases
Table 3.3 Profile of Pretest, Posttest, and Gain Scores for Intervention and Comparison Groups by SLP and Total Group Averages for the Semantic Composite of TOLD:P4

<table>
<thead>
<tr>
<th>SLP</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
<th>Gain Mean</th>
<th>Gain SD</th>
<th>Pretest Mean</th>
<th>Pretest SD</th>
<th>Posttest Mean</th>
<th>Posttest SD</th>
<th>Gain Mean</th>
<th>Gain SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a</td>
<td>70.25</td>
<td>10.82</td>
<td>92.00</td>
<td>13.37</td>
<td>21.75</td>
<td></td>
<td>74.00</td>
<td>20.05</td>
<td>85.25</td>
<td>14.73</td>
<td>11.25</td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>72.00</td>
<td>14.45</td>
<td>72.50</td>
<td>20.72</td>
<td>0.50</td>
<td></td>
<td>79.00</td>
<td>14.73</td>
<td>88.68</td>
<td>8.33</td>
<td>9.67</td>
<td></td>
</tr>
<tr>
<td>3b</td>
<td>65.75</td>
<td>16.16</td>
<td>86.00</td>
<td>14.85</td>
<td>20.25</td>
<td></td>
<td>75.00</td>
<td>10.92</td>
<td>82.25</td>
<td>11.30</td>
<td>-2.75</td>
<td></td>
</tr>
<tr>
<td>4c</td>
<td>85.50</td>
<td>22.78</td>
<td>98.00</td>
<td>7.11</td>
<td>13.50</td>
<td></td>
<td>91.33</td>
<td>8.08</td>
<td>85.67</td>
<td>7.78</td>
<td>-5.67</td>
<td></td>
</tr>
<tr>
<td>5d</td>
<td>76.00</td>
<td>1.41</td>
<td>110.50</td>
<td>9.19</td>
<td>34.50</td>
<td></td>
<td>72.33</td>
<td>2.31</td>
<td>85.33</td>
<td>3.06</td>
<td>13.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>73.67</td>
<td>15.71</td>
<td>89.72</td>
<td>17.36</td>
<td>16.05</td>
<td></td>
<td>77.88</td>
<td>13.40</td>
<td>82.88</td>
<td>10.98</td>
<td>5.00</td>
<td></td>
</tr>
</tbody>
</table>

in performance were attained by 3b and 4c. Only one group approached a standard deviation in change at 13.00. All gains in this group were from poor to below average.

Table 3.3 shows the average total composite pretest and posttest scores for the intervention and comparison groups. The intervention group increased from 73.67 to 89.72, while the comparison group scores increased from 77.88 to 82.88. This resulted in a mean gain for the total intervention group of 16.05 representing a standard deviation of change, compared to 5.00 for the comparison group. The total gain score for the intervention group represented a clinically significant change, from a classification of poor on the TOLD:P4 to nearly average.

Figure 3.4 shows the average pretest and posttest gain scores for the intervention and comparison groups for semantic composite. The intervention group increased from 73.67 to 89.72 while the comparison group scores increased from 77.88 to 82.88. The scores represent a change from the poor to nearly the average range.

To determine if these differences are reliable, data were analyzed in a 2 Treatment Condition by 5 Speech-Language Pathologist by 2 Times of Measurement Mixed Model ANOVA. Mauchly’s Test of the sphericity assumption was not significant and therefore uncorrected F statistics were used in the analysis. There was a significant interaction effect
for Time by Treatment Condition, $F(1, 25) = 6.341$, $p < .019$, $\eta^2_p = .201$, indicating that treatment condition accounted for 20.1% of the variance in score gains from pretest to posttest. There was not a significant interaction effect for Time by SLP, $F(4, 25) = 1.376$, $p < .270$, $\eta^2_p = .180$.

Figure 3.5 and Figure 3.6 show scatterplots of the Semantic composite posttest scores as a function of pretest scores. The first panel shows the results of the intervention group (Figure 3.5). Looking from left to right it can be seen that 2 of the 18 students scored at or above 85 at pretest. Looking from top to bottom, it can be seen that these 5 students increased their scores to over 100 and 9 more students gained to score above 85 for a total of 10 students. Among the comparison group, 6 of 17 students scored above 85 at pretest (Figure 3.6). At posttest 2 of these students had fallen below 85. Six students who were below 85 at pretest rose to above 85, for a total of 10 students above 85 at posttest.

**Syntactic Composite**

Three measures of syntax are obtained from the TOLD:P4, including Syntactic Understanding, Sentence Imitation, and Morphological Completion. For the Syntactic
Understanding subtest, scores distributed from lower to higher represent progressively more abstract concepts, or distance between the perception and the language used to talk about it.

Examination of Table 3.4 reveals that both intervention and comparison groups responded to approximately 10 of the Syntactic Understanding items at pretest, requiring participants to attend to attributes (Level V) or meaning interpreted from context (Level VI). At posttest, the mean
score of 17.06 for the intervention group approximated the level where greater background knowledge (Level VII) was required, while the comparison group made fewer gains and did not change levels. The intervention group imitated fewer sentences (i.e., Sentence Imitation subtest) at pretest but made greater gains, resulting in slightly higher scores at posttest. Similarly [Morphological Comprehension], the intervention group started out lower at pretest but made greater gains, resulting in a score comparable to the comparison group. For all three syntactic subtests, the gains were greater for the intervention group.

Table 3.4. Pretest and Posttest Raw Scores, Means, and Standard Deviations for Syntactic Understanding, Sentence Imitation, and Morphological Completion from the TOLD:P4.

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean Gain</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean Gain</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int.</td>
<td>10.56 (3.62)</td>
<td>17.06 (4.33)</td>
<td>6.50</td>
<td>7.67 (4.04)</td>
<td>11.39 (4.78)</td>
<td>3.72</td>
<td>3.72 (4.30)</td>
<td>10.44 (8.40)</td>
<td>6.72</td>
</tr>
<tr>
<td>Comp.</td>
<td>10.67 (7.32)</td>
<td>15.50 (5.28)</td>
<td>4.83</td>
<td>9.22 (5.58)</td>
<td>10.50 (5.31)</td>
<td>1.28</td>
<td>7.11 (5.35)</td>
<td>10.78 (7.08)</td>
<td>3.67</td>
</tr>
</tbody>
</table>

Note. Int. = Intervention; Comp. = Comparison

The Syntactic composite combines the scores from the three syntactic subtests. Table 3.5 profiles the Syntactic composite scores for each of the five SLPs as well as the Total of all groups. Examination of the groups by SLPs shows that one of the groups (5d) made greater than one standard deviation of change following treatment. Three other groups (1a, 3b, 4c) made a change of nearly one standard deviation. Only one group (2a) made negative gains. The gain scores for four of the SLP groups were clinically significant, with three improving ratings from poor to near average/average, and one from very poor to poor. In contrast, for the comparison group only small to moderate gains were seen in two participants (1a and 5d) while decreases in performance were attained by 3b and 4c. None approached a standard deviation in change. All gains in this group were from poor to below average.
Table 3.5. Profile of Pretest, Posttest, and Gain Scores for Intervention and Comparison Groups by SLP and Total Group Averages for the Syntactic Composite of TOLD:P4

<table>
<thead>
<tr>
<th>SLP</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Gain</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>1a</td>
<td>78.25</td>
<td>8.65</td>
<td>92.50</td>
<td>16.52</td>
<td>14.25</td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>79.75</td>
<td>10.34</td>
<td>75.75</td>
<td>11.84</td>
<td>-4.00</td>
<td></td>
</tr>
<tr>
<td>3b</td>
<td>59.75</td>
<td>2.37</td>
<td>73.25</td>
<td>10.05</td>
<td>14.00</td>
<td></td>
</tr>
<tr>
<td>4c</td>
<td>76.00</td>
<td>12.65</td>
<td>89.50</td>
<td>14.55</td>
<td>13.50</td>
<td></td>
</tr>
<tr>
<td>5d</td>
<td>77.00</td>
<td>1.41</td>
<td>105.50</td>
<td>10.61</td>
<td>28.50</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>73.84</td>
<td>11.10</td>
<td>85.28</td>
<td>15.96</td>
<td>11.44</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>1a</td>
<td>82.50</td>
<td>14.36</td>
<td>87.50</td>
<td>12.04</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>2a</td>
<td>93.33</td>
<td>13.32</td>
<td>95.00</td>
<td>12.29</td>
<td>1.67</td>
<td></td>
</tr>
<tr>
<td>3b</td>
<td>78.25</td>
<td>11.73</td>
<td>76.50</td>
<td>3.41</td>
<td>-1.75</td>
<td></td>
</tr>
<tr>
<td>4c</td>
<td>78.00</td>
<td>15.88</td>
<td>77.33</td>
<td>16.17</td>
<td>-0.67</td>
<td></td>
</tr>
<tr>
<td>5d</td>
<td>73.00</td>
<td>9.54</td>
<td>84.00</td>
<td>3.46</td>
<td>11.00</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>80.94</td>
<td>13.20</td>
<td>83.82</td>
<td>11.45</td>
<td>2.88</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3.7 shows the average pretest and posttest scores for the intervention and comparison groups. The intervention group increased from 73.84 to 85.28 while the comparison group scores increased from 80.94 to 83.82. This represented an average gain of 11.44 for the intervention condition compared to 2.88 for the control condition. The total gain score for the intervention group represented a clinically significant change, from a classification of poor on the TOLD:P4 to below average.

To determine if these differences are reliable, data were analyzed in a 2 Treatment Condition by 5 Speech-Language Pathologist by 2 Times of Measurement Mixed Model ANOVA. Mauchly’s Test of the sphericity assumption was not significant and therefore uncorrected F statistics were used in the analysis. There was a significant interaction effect for Time by Treatment Condition, $F(1,25) = 7.310$, $p < .012$, $\eta^2_p = .226$, indicating that intervention condition accounted for 22.6% of the variance in score gains from pretest to posttest. There was a significant interaction effect for Time by SLP, $F(4,25)=2.80$ $p < .048$, $\eta^2_p = .309$.

Figure 3.8 and Figure 3.9 illustrate a scatterplot of the posttest scores for the Syntactic composite as a function of pretest scores. The first panel shows the results of the intervention
Figure 3.7  Syntactic Gains on the TOLD:P4 Made by the Intervention and Comparison Groups group (Figure 3.8). Looking from left to right it can be seen that 2 of the 18 participants scored at or above 85 at pretest. Looking from top to bottom, it can be seen that these 5 participants increased their scores to over 100 and 9 more participants gained to score above 85 for a total of 11 of 18 participants. Among the comparison group participants 6 of 17 participants scored above 85 at pretest (Figure 3.9). At posttest 2 of these participants had fallen below 85. Six participants who were below 85 at pretest rose to above 85, for a total of 10 of 17 participants above 85 at posttest.

**Literacy Skills**

Literacy skills at kindergarten include phonemic awareness and print awareness abilities. Three measures of phoneme awareness, the Word Discrimination and Phonemic Analysis subtests of TOLD:P4 and the Segmentation subtest of the Test of Phonemic Awareness were analyzed. The measures of print awareness included letter name and letter sound knowledge.
Table 3.6 profiles the raw scores for measures of phonemic awareness. Raw scores were used because several participants were beyond the age norms available for the subtests. However, interpretation of scores were made using the norms for the 6;11 age group (highest norms available on this subtest). On the Word Discrimination subtest, the intervention group scored slightly higher than the comparison group at pretest (8.22 vs 6.94),
with both receiving a rating of very poor. The comparison group made slightly greater gains rendering identical means (14.39) rated as below average for both groups at posttest. Similarly, the intervention group had slightly higher scores at pretest for Phonemic Analysis (3.89 vs 2.72), with ratings that placed both in the very poor range. The comparison group made slightly greater gains (4.44 vs 4.22), but the posttest scores for the intervention group remained higher (8.11 vs 7.17). Both groups improved from the very poor to the poor range. The TPAT segmentation score was a combination of the three Segmentation subtests (i.e., sentences to words, words to syllables, and words to phonemes). On the Segmentation composite, the Intervention group scored slightly higher (7.33) than the Comparison group (6.95) at pretest, placing both in the poor range. The groups scored essentially the same at posttest (14.72 for Intervention vs 14.39 for Comparison) rendering a slightly higher gain score for the Comparison group (7.89 vs 7.06). This resulted in a change in rating from poor to average for both groups.


<table>
<thead>
<tr>
<th>Group</th>
<th>Word Discrimination</th>
<th>Phonemic Analysis</th>
<th>Segmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest M (SD)</td>
<td>Posttest M (SD)</td>
<td>Mean Gain</td>
</tr>
<tr>
<td>Int</td>
<td>8.22 (7.52)</td>
<td>14.39 (8.00)</td>
<td>6.17</td>
</tr>
<tr>
<td>Comp</td>
<td>6.94 (8.00)</td>
<td>14.39 (6.33)</td>
<td>7.44</td>
</tr>
</tbody>
</table>

Note. Int = Intervention; Comp = Comparison

To determine if group differences are reliable, data for gain scores were analyzed in a 2 Treatment Condition by 5 Speech-Language Pathologist by 2 Times of Measurement Mixed Model ANOVA. Mauchly’s Test of the sphericity assumption was not significant and therefore uncorrected F statistics were used in the analysis. There was not a significant interaction effect for Time by SLP, \( F(9,36) = 1.394, p = .192, \eta^2_p = .186 \). [add condition by time interaction]
**Print Awareness.** Print Awareness was measured by the total number of letters out of 52 (26 upper and 26 lower case letters) and the total number of letter-sounds produced out of 26 possible. Table 3.7 profiles the raw scores for measures of print awareness. On the Letter Identification subtest, the intervention group scored higher than the comparison group at pretest. At posttest, the comparison group made greater gains rendering only slightly higher means for the intervention group at posttest. Similarly, the intervention group had higher scores at pretest for Letter-sound learning but the comparison group made slightly greater gains, resulting in only slightly higher scores for the intervention group in posttest scores.

Table 3.7  Pretest and Posttest Raw Scores, Means and Standard Deviations for Letter Naming and Letter-Sound Association

<table>
<thead>
<tr>
<th>Group</th>
<th>Letter Identification</th>
<th>Letter Sound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest M (SD)</td>
<td>Posttest M (SD)</td>
</tr>
<tr>
<td>Int</td>
<td>33.89 (13.44)</td>
<td>49.56 (3.90)</td>
</tr>
<tr>
<td>Comp</td>
<td>20.22 (15.22)</td>
<td>44.83 (11.69)</td>
</tr>
</tbody>
</table>

Note. Int = Intervention; Comp = Comparison

Table 3.8 profiles the Letter Naming scores for each of the five SLPs as well as the Total of all groups. Examination of the groups by SLPs revealed that all of the groups in both conditions showed gains. The participants in the intervention condition knew more letters at pretest, with an average of 33.89 compared to 20.22. This may have been because six of the intervention kids were repeating kindergarten. Greater gains were made at posttest by the Comparison group (i.e., 24.61 versus 15.70), resulting in posttest scores that were only slightly higher for the Intervention group who scored near mastery of both upper and lower case letters (i.e., 49.56 out of 52, and 44.83, respectively). Eight of the Intervention group recognized all letters at posttest compared to one from the Comparison group.
Table 3.8 Letter Naming Comparison of Pretest, Posttest, and Gain Scores for Intervention and Comparison Groups by SLP and Total Group Averages.

<table>
<thead>
<tr>
<th>SLP</th>
<th>Intervention Group</th>
<th></th>
<th></th>
<th></th>
<th>Comparison Group</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
<td>Pretest</td>
<td>Posttest</td>
<td>Pretest</td>
<td>Posttest</td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>1a</td>
<td>30.75</td>
<td>13.91</td>
<td>52.00</td>
<td>0.00</td>
<td>21.25</td>
<td> </td>
<td>18.25</td>
<td>22.07</td>
</tr>
<tr>
<td>2a</td>
<td>30.25</td>
<td>15.63</td>
<td>43.50</td>
<td>4.36</td>
<td>13.25</td>
<td> </td>
<td>23.33</td>
<td>8.50</td>
</tr>
<tr>
<td>3b</td>
<td>43.00</td>
<td>7.39</td>
<td>51.50</td>
<td>0.58</td>
<td>8.50</td>
<td> </td>
<td>33.00</td>
<td>12.36</td>
</tr>
<tr>
<td>4c</td>
<td>29.50</td>
<td>16.90</td>
<td>51.25</td>
<td>0.96</td>
<td>21.75</td>
<td> </td>
<td>6.00</td>
<td>3.61</td>
</tr>
<tr>
<td>5d</td>
<td>38.00</td>
<td>14.14</td>
<td>49.50</td>
<td>0.71</td>
<td>11.50</td>
<td> </td>
<td>17.75</td>
<td>13.15</td>
</tr>
<tr>
<td>All</td>
<td>33.89</td>
<td>13.44</td>
<td>49.56</td>
<td>3.90</td>
<td>15.70</td>
<td> </td>
<td>20.22</td>
<td>15.22</td>
</tr>
</tbody>
</table>

To determine if group differences for Letter Naming are reliable, data were analyzed in a 2 Treatment Condition by 5 Speech-Language Pathologist by 2 Times of Measurement Mixed Model ANOVA. Mauchly’s Test of the sphericity assumption was not significant and therefore uncorrected F statistics were used in the analysis. There was a significant intervention effect for time by treatment condition, $F(1,26) = 4.707, p < .05, \eta^2_p = .153$. There was not a significant interaction effect for time by SLP, $F(4,26) = 1.224, p = .325, \eta^2_p = .158$.

Table 3.9 profiles the Letter-Sound scores for each of the five SLPs as well as the Total of all groups. Examination of the groups by SLPs revealed that all of the groups in both conditions showed gains. The participants in the intervention condition knew approximately twice as many letter-sounds at pretest, with an average of 9.61 compared to 4.83. This may have been because six of the intervention kids were repeating kindergarten. Greater gains were made at posttest by the Comparison group (i.e., 16.17 versus 14.56 for Intervention participants), resulting in posttest scores that were only slightly higher for the Intervention group who scored near mastery for letter-sounds (i.e., 24.17 out of 26, and 21.00 for the Comparison group). Eight
of the Intervention group produced all letter-sounds at posttest compared to one from the Comparison group.

Table 3.9 Letter-Sound Comparison of Pretest, Posttest, and Gain Scores for Intervention and Comparison Groups by SLP and Total Group Averages.

<table>
<thead>
<tr>
<th>SLP</th>
<th>Pretest</th>
<th>Posttest</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>1a</td>
<td>11.50</td>
<td>12.18</td>
<td>25.00</td>
</tr>
<tr>
<td>2a</td>
<td>9.00</td>
<td>8.16</td>
<td>21.00</td>
</tr>
<tr>
<td>3b</td>
<td>7.25</td>
<td>8.85</td>
<td>25.00</td>
</tr>
<tr>
<td>4c</td>
<td>12.25</td>
<td>10.01</td>
<td>25.75</td>
</tr>
<tr>
<td>5d</td>
<td>6.50</td>
<td>3.54</td>
<td>24.00</td>
</tr>
<tr>
<td>All</td>
<td>9.61</td>
<td>8.67</td>
<td>24.17</td>
</tr>
</tbody>
</table>

To determine if group differences for Letter-Sound are reliable, data were analyzed in a 2 Treatment Condition by 5 Speech-Language Pathologist by 2 Times of Measurement Mixed Model ANOVA. Mauchly’s Test of the sphericity assumption was not significant and therefore uncorrected F statistics can be used in the analysis. There was not a significant intervention effect for time by treatment condition, $F(1,26) = 0.284, p = .599, \eta^2_p = .011$. There was not a significant interaction effect for time by SLP, $F(4,26) = 0.476, p = .753, \eta^2_p = .068$.

**Phonology**

The Word Articulation supplementary subtest of the TOLD:P4 was administered to determine if the scaffolded talk would improve articulation without directly targeting specific speech sounds. Raw scores were used because several participants were beyond the age norms available for the subtest. However, interpretation of scores was made using the norms for the 6;11 age group (highest norms available on this subtest). Six participants who completed the study had articulation goals on their IEPs. In addition, children from both groups displayed...
articulation errors at a rate greater than predicted by age expectations. This was evident by pretest scores for the Intervention group that were lower (10.50 out of 25) than the Comparison group (14.94), with ratings of poor and below average, respectively (Table 3.10). At posttest, the gain scores for the Intervention group were twice as large (6.22) as the Comparison group (3.06). These gains resulted in posttest improvements for the Intervention group (16.72) from poor to near average (average = 17), and from below average to average (i.e., 18) for the Comparison group.

Table 3.10 Pretest and Posttest Raw Scores, Means and Standard Deviations for Word Articulation Subtest

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int.</td>
<td>10.50 (4.31)</td>
<td>16.72 (6.08)</td>
<td>6.22</td>
</tr>
<tr>
<td>Comp.</td>
<td>14.94 (3.62)</td>
<td>18.00 (5.32)</td>
<td>3.06</td>
</tr>
</tbody>
</table>

To determine if group differences are reliable, data were analyzed using a one-way within participants ANOVA for the Word Articulation subtest. The results for the ANOVA indicated a non-significant time effect, $F(1, 34) = 3.19$, $p = .08$, multivariate $\eta^2_p = .09$.

When the six children from the Intervention group with articulation impairment designated on their IEPs were considered, their means at pretest (8.50) were lower than the mean of the total Intervention group (10.50), with ratings in the very poor range compared to poor for the total group (see Table 3.11). At posttest, the IEP subgroup made smaller gains than the total group (i.e., 5.33 versus 6.22, respectively). Thus, the mean of the IEP subgroup at posttest was also lower than the total group (i.e., 13.83 versus 16.72, respectively). This represented a clinically significant change from the very poor to the below average level.
Table 3.11  Pretest and Posttest Raw Scores, Means and Standard Deviations for Word Articulation Subtest for Six Participants with Identified Articulation Impairment Designated on IEP compared to the Total Intervention Group

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest M (SD)</th>
<th>Posttest M (SD)</th>
<th>Mean Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEP</td>
<td>8.50 (5.36)</td>
<td>13.83 (6.94)</td>
<td>5.33</td>
</tr>
<tr>
<td>n = 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Int</td>
<td>10.50 (4.31)</td>
<td>16.72 (6.08)</td>
<td>6.22</td>
</tr>
<tr>
<td>n = 18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. IEP = Individual Educational Plan; Int = Intervention Group

To determine if the gains represented a statistically significant change, a paired-samples $t$-test was conducted to evaluate whether students on IEP for articulation services made significant gains between pre- and posttest. The mean and standard deviation results are profiled in Table 3.11. The results indicated that the mean for posttest ($M = 13.83$, $SD = 6.94$) was significantly greater than the mean for pretest ($M = 8.50$, $SD = 5.36$), $t(5) = 2.87$, $p < .05$. 
DISCUSSION

Kindergarten has always been a foundational year for school success. However, the structure of the newly adopted Common Core State Standards (CCSS) presents a clear conception of what each standard looks like at kindergarten and how that same skill increases in complexity at each successive grade level through high school. Any standards not mastered at kindergarten cannot be dismissed because these weaknesses will have an impact on what is mastered in subsequent years. Since at least 32 of the English Language Arts standards fit within the SLPs’ role as language specialists, it is critical that we align our interventions with the goals of the CCSS.

The traditional IEP sets two or more goals that focus on single speech or language skills, such as “When presented with pictures, the student will verbally identify pictured items upon request with 90% accuracy in 4 out of 5 trials.” When goals are written as discrete skills such as this, intervention tends to mirror the wording of the objective and time is spent naming pictures from various picture sets or vocabulary lists. Addressing more than a few isolated CCSS goals is unlikely using this model. However, when language is viewed from the perspective of a continuum of progressively more abstract levels (Blank, Rose, & Berlin, 1978; Moffett, 1968, 1992; Monroe, 1951; Norris & Hoffman, 1993, 2005), a very different type of intervention results. In this model, no single speech or language skills are targeted, but rather levels of discussion are navigated that involve concrete and abstract vocabulary, higher level concepts, inferences, evaluations, longer and more complex utterances, and topic maintenance across turns in connected discourse. The syntax, vocabulary, concepts, and form of expression are integrated rather than separated (Moffett, 1968).

Overall Language

One question resulting from this alternative model became whether the integrated discussion would result in measurable changes in language. The Spoken Language composite of
the TOLD:P4 showed that a broad range of language abilities did show a significant change following 16 weeks of intervention. This change was shown for all five SLPs providing treatment at different schools, indicating the effects are fairly robust. The gain for all but one of the SLPs was greater than a standard deviation and placed nine participants within a standard deviation of the mean. These findings indicate that the intervention participants were closing the gap with typically developing peers and the gains were clinically as well as statistically significant. The group showing less change was conducted by an SLP who was a recent graduate completing a Clinical Fellow year and thus had far less experience than the other SLPs who reported 10 to 30 years of school-based experience. There may be a learning curve for managing a group and assuring all students are engaged in the interactions. However, no obvious deviations from the plans were apparent during fidelity checks for this SLP and this finding was very surprising.

**Semantics**

When the Semantic composite of the TOLD:P4 scores was examined, an average change of greater than 1 standard deviation was shown, resulting in scores that increased from the poor to the low average range. This was true for groups conducted by four of the five SLPs. Item analyses of the Picture Vocabulary subtest showed that the level of abstraction in the types of vocabulary words understood improved from recognizing the function of words to a higher level of relating background knowledge and recognizing subordinate categories for the intervention group. Similar finding held for the other subtests (Relational and Oral Vocabulary). Ten of the students performed above the 85th percentile and five others performed very near the average range for word meaning. Only two participants remained in the poor range at posttest. The change in the Semantic composite was expected since the intervention focused on engaging in discussions
where the same pictured scene was talked about at increasing levels of abstraction (Blank, Rose, & Berlin, 1978; Moffett, 1968, 1992; Monroe, 1951; Norris & Hoffman, 1993, 2005). Children were made aware that a series of more decentered or “bigger” ideas would be considered throughout the lesson as a clip was moved to each higher icon on the SDS Semantic board. When children were unable to respond appropriately, the SLP engaged in scaffolding, linking ideas to the child’s personal experience and providing choices that the children would then put into their own words. For example, in one video recorded interaction, when asked “Can you think of things that are like a bus?” the children only replied that they rode the bus and one argued that he didn’t ride the bus. The SLP asked that child how he got to school, but when he couldn’t formulate an answer, she dropped the question to a lower level, that is, “Who brings you to school?” and he was able to answer that his mom did. She then tried a cloze technique (“And you ride in a ___ what?”) and then a binary choice (“You ride on a bike or in a car?”) and finally got a response. The original question was again posed, and this time children volunteered that a car and a bike were like a bus because you could ride them to school. The SLP then supplied a higher level word, stating that all of these were different kinds of transportation.

These types of scaffolded interactions that the SLP is trained to engage in are qualitatively different from interactions that typically take place in the classroom. Generally, questions are posed to a large group and the teacher responds to the child who gives the correct answer. If a child doesn’t know the answer, the teacher moves on to the next child rather than finding a language level where the child can respond and gradually leading the child to think about relevant bits of information that will lead to the correct understanding. The SLP has the advantage of a small group and the goal of facilitating the child’s ability to use language to engage in a discussion, stay on topic, and use cues and background knowledge to derive a conclusion and put the concepts into words. The SLP also has the advantage of using a picture
from a single page in the book and discussing it at different levels for 30 minutes while the classroom teacher must follow the curriculum and read the entire story in a single sitting. The SLP’s interactions provide language impaired children time and multiple opportunities to understand more difficult concepts and assistance to express them using language.

**Syntax**

The expression of higher level ideas requires generally longer and more complex utterances, including embedded clauses and coordinating, subordinating, and correlative conjunctions. When the Syntactic composite of the TOLD:P4 was examined, four of the five SLP’s groups approached or exceeded one standard deviation of change. Students improved from a rating of poor to below average, with ten participants within one standard deviation from the mean and six others approaching this level. These gains were both clinically and statistically significant. Once again in our video segment, the SLP recasts children’s utterances with high frequency and expands to include grammatical forms throughout the discussion (child: “The bus take me a toy store.” SLP: “The bus took him to the toy store.”) Gains were seen for Morphological Completion as well as syntax. At pretest items requiring the addition of regular plurals were essentially the only correct responses for the majority of participants, but at posttest markers for verb tense and possessive also appeared. The video showed that at lower levels the discussion focused on the pictured bus and actions occurring in the present tense. At higher levels, questions asking for predictions were posed and children heard and responded to modal verbs. The SLP often recasts the children’s ideas using both present verb structures and modals, such as “The kids are lining up for the bus and when the bus driver opens the door they will get on the bus.” The gains for the intervention group were nearly twice as great as the comparison group who did not have the benefit of the scaffolded interactions.
Literacy

A growing body of research is finding that the children who are failing reading as early as kindergarten are often those with comorbid speech and/or language delays (Bird et al., 1995; Gosse et al., 2009; Leitao & Fletcher, 2004; Lewis & Freebairn, 1992; Peterson, et al., 2009). Our findings were consistent with these studies. Of the original 20 children in the Intervention group, ten were also receiving RtI services and 16 had poor phonemic awareness abilities (14 scored very poor, 1 poor, 1 below average). One child classified as articulation only scored in the average range, but two others designated articulation only as well as those with language impairment scored poor or very poor. Of the original 20 children in the comparison group who had comparably low language scores, 14 were receiving RtI services and 19 had phonemic awareness scores in the very poor (15), poor (1), or below average (3) ranges.

Changes in Phonemic Awareness and Print Awareness were both significant for time with no differences between the groups at posttest. This was not an unexpected finding since all of the comparison participants and 14 of the intervention participants were receiving small group intervention for reading outside of the classroom. Participants in our intervention also used MorphoPhonic Faces to sequence the words from the story to recreate the sentence. The MorphoPhonic Face thus provided a visualization of a word as a mental object, and also helped increase awareness of the letters and the first letter-sound. Children on video could be seen looking for the correct letter-sound cue as the searched for the next word in the sentence. Eight of the Intervention group participants knew all letter names and sounds at posttest compared to only one of the Comparison group, and those who were not in RtI made as many gains or more than those who were, indicating value added by the SLP for literacy measures.
Articulation

The intervention did not directly target speech production or any specific sound for correction. SLPs were encouraged to recast words and the speech production cues provided by the MorphoPhonic Faces were frequently used to remind participants of articulation. As the words for the daily sentence were introduced, the SLP would direct attention to the Phonic Face letter and ask children what sound the letter made. If children didn’t produce the sound correctly, the MorphoPhonic Face card was used to examine the speech production cues and practice the sound. For example, the children produced /ð/ as /d/. The SLP encouraged them to look at the tongue position in the face and attempt to make the sound and then the word. Other letters in the word were also examined and children were asked what sound corresponded with the letter. Between letter-sound practice and incidental articulation correction, the last five minutes of each intervention session immersed participants in talk about sounds and sounds in word positions.

Changes in articulation were not significant for time or group for all participants. However, participants in the Intervention condition scored in the poor range on the Word Articulation supplementary subtest of the TOLD:P4 at pretest and improved to the low average range at posttest. Twice as many sounds were corrected at posttest for the intervention group compared to the comparison group. While articulation errors remained, the sounds were largely developmental. These findings support studies (e.g., Norris and Hoffman [1998, 2005]) that demonstrate articulation improves from language intervention.

Articulation appears to be a primary reason a child is identified by kindergarten for speech and language services. Of the original children who were in the intervention condition, 12 had IEPs and seven were identified as articulation or articulation-language. Nine of the
intervention children had scores in the poor range for the Articulation subtest and only four were average at pretest. In contrast, only five of the comparison group participants exhibited articulation delays and these were all in the below average range, indicating mild unintelligibility.

These findings suggest that teachers refer primarily on the basis of articulation impairments at kindergarten. These children are very likely to have comorbid reading disabilities. Many of the children identified for the comparison group based on literacy scores also scored more than 1.5 standard deviations from the mean in language but were not being seen by the SLP. This group needs to be looked at more closely in research to determine if we are missing a large group of participants who should be receiving language intervention or if there are markers that differentiate them from children who qualify for services.

Limitations and Future Research

Although the current exploratory study provided insights about interventions provided to students at-risk for reading utilizing a multilevel approach to linguistic input, several limitations need to be addressed in future research. Some of the limitations of the current study included the instructional methods, study design and fidelity, site logistics, and educational enhancements.

**Instructional methods.** Although the current study provided a scripted lesson plan, deviations from the plan are plausible based on each students’ prior experiences, linguistic competency, and familiarity with book sharing experiences. Each SLP was trained to provide scaffolded feedback to increase the student’s level of linguistic engagement. Additionally, there was a wide range in the level of experience in the field in both years of experience and level of education. Adherence to the script was confirmed through periodic fidelity checks, but it is possible that each clinician could have had different performance levels in providing intervention.
services. Despite the positive results of this study, these factors may confound the results of future studies. Future research should account for the level of deviations from the script and the level of scaffolded feedback provided during each session. In future studies, the observation form should be amended to account for the types and quantity of scaffolding provided by the SLP. This will allow for an accurate measure across all SLPs providing intervention.

Another limitation of the instructional methods was the number of individuals conducting pre- and posttest assessments. Each member of the assessment team was provided adequate training time and feedback. Variability in assessment style and experience could affect the outcome of testing. As a result, accounting for the variability between each assessor was difficult even with knowing their basic demographic information and prior experience with providing assessments. These factors could have confounded the consistency between pre- and posttest assessments. Future research should assign the same person to administer both pre- and posttest assessments.

Study design and fidelity. Participant recruitment is an important component to consider when designing a study. This study was unique in that it spanned several local schools and included group interventions. Each group was conceptualized based on priority of need as indicated by an Individual Education Plan (IEP) or below average performance on the assessment given to all first-time kindergarten students. The inclusion in the intervention group of students who had IEPs for speech or language and/or were repeating kindergarten only appearing in the intervention group may have confounded the results of this study. Particularly students repeating kindergarten may have entered the study with prior knowledge of classroom materials utilized or assessment items (e.g., letter names).
Sample size is another important component to consider when designing a study. In order to align with the American Speech-Language and Hearing Associations (ASHA, 2012) guidelines, group interventions are encouraged to provide speech and language services to a wide-range of individuals. This study utilized group interventions consisting of 3-4 students per SLP. As a result, the SLPs had to adapt to the language styles of each member of the group. Future research should continue to utilize a group design, but perform analysis prior to intervention to assess the language level of the group as a whole.

Additionally, this study explored the delivery of multiple linguistic skills simultaneously in one session. It is not to argue that this service delivery format is less advantageous than intervention for individual discrete skills, but rather the statistical analyses examined for the same small group (i.e., 2-4 students) incorporated across multiple linguistic skills. Future research should continue to assess the efficacy of service delivery of multiple linguistic skills across various populations, a larger sample size, a broad range of developmental profiles and/or various geographic regions.

Fidelity was also a limitation of the study. The fidelity of a study is important to assessing the outcome of a study as it relates to efficacy and effectiveness. Fidelity measures revealed strict adherence to intervention protocol during session the primary investigators observed. Sessions not attended by the primary investigators were not video recorded. As a result, unobserved sessions could have resulted in deviations from protocol. Not adhering to the prescribed protocol may have confounded the results of this study. Future research should include video recordings of each session and random observations by person’s blind to the purpose of the study.
**Site logistics.** The initial design of the study was to incorporate group speech-language services in the kindergarten classroom during allotted concentrated reading block. Initially, the interventions took place in the classroom in the morning. Because of scheduling constraints some interventions were rescheduled during various times of the day. Without a consistent time of intervention across all groups it is plausible that attentiveness to the tasks may have varied across groups. Due to an overwhelming amount of noise and activity in the classrooms, some interventions were moved into the hallway near the classroom. Even with the change in location, there was still school noise and distraction. These factors may have confounded the student’s ability to maintain consistent focus on the intervention. Future studies should choose a location that is consistent across all groups in which there is decreased noise level and minimal distractions.

Additionally, some students were not able to receive identical number of sessions across all participants due to class field trips and absences. The SLPs were aware of the time frame of the study and offered make-up sessions when their schedules permitted. Future studies should strongly encourage make-up sessions in the case of any of the scenarios listed above.

**Educational enhancements.** Each of the schools offered Response to Intervention services to students in need of additional reading and math support. Some students in both the intervention and comparison groups received additional RtI services either at the Tier 2 level (30 minutes one time per week) or Tier 3 level (30 minutes at least two times per week). Additionally, students in some schools also participated in a Reading Buddy program by which a local volunteer would read with the child one time per week. Both of these additional services may have confounded the results of the study. However, future studies cannot exclude these
additional services from the student’s support system. Therefore, future studies could assess the level of language and literacy support each of these services provides.

With respect to the aforementioned limitations, future studies should replicate the current study and examine if different results are revealed. As the school-based SLP defines her role in the CCSS, it is critical to structure interventions that impact speech-language goals within the classroom curriculum. Future studies should also investigate the effects of literacy-based interventions for children with varying speech-language needs (e.g., autism spectrum disorder, fluency disorder, developmental delays). This type of study would provide insight about the different levels of semantic input necessary to facilitate language development on varying linguistic profiles. Additionally, future studies can utilize the multilevel approach for various classroom curriculums. The current study provides a model for intervention that can be used during any classroom lesson (e.g., social studies, science, math). Future studies assessing the impact of multilevel linguistic input in these classroom domains would provide resources to increase the impact the SLP has across all school curriculum.
REFERENCES


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Moffett, J. (1968). Teaching the universe of discourse.


APPENDIX A
IRB INFORMATION

Project Report and Continuation Application
(Complete and return to IRB, 131 David Boyd Hall.
Direct questions to IRB Chairman Robert Mathews 578-8692.)

IRB#: 3120 Your Current Approval Expires On: 8/17/2012
Review type: Expedited Risk Factor: Minimal
PI: Janet Norris Dept: COMD Phone: 578-3936
Student/Co-Investigator: Ashley Meaux
Project Title: SALSA Development Project
Number of Subjects Authorized: 300

Please read the entire application. Missing information will delay approval.

I. PROJECT FUNDED BY: ____________________________ LSU proposal # ______

II. PROJECT STATUS: Check the appropriate blank(s); and complete the following:

X 1. Active, subject enrollment continuing; # subjects enrolled: 300

_____ 2. Active, subject enrollment complete; # subjects enrolled: ______

_____ 3. Active, subject enrollment complete; work with subjects continues.

_____ 4. Active, work with subjects complete; data analysis in progress.

_____ 5. Project start postponed

_____ 6. Project complete; end date ______

_____ 7. Project cancelled: no human subjects used.

III. PROTOCOL: (Check one).

X Changes are requested*

* List (on separate sheet) any changes to approved protocol.

IV. UNEXPECTED PROBLEMS: (Did anything occur that increased risks to participants):

➢ State number of events since study inception: 0 since last report: 0

➢ If such events occurred, describe them and how they affect risks in your study.

➢ Have there been any previously unreported events? Y/N _____

   (If YES, attach report describing event and any corrective action).

V. CONSENT FORM AND RISK/BENEFIT RATIO:

Do new knowledge or adverse events change the risk/benefit ratio? Y/N N____;

Is a corresponding change in the consent form needed? Y/N N____

VI. ATTACH A BRIEF, FACTUAL SUMMARY of project progress/results to show continued participation of subjects

is justified; or to provide a final report on project findings.

VII. ATTACH CURRENT CONSENT FORM (only if subject enrollment is continuing); and check the appropriate blank:

X 1. Form is unchanged since last approved (only school names will change)

_____ 2. Approval of revision requested hereewith (identify changes)

Signature of Principal Investigator: ____________________________ Date: 8/3/12

IRB Action: 

✓ Continuation approved; Approval Expires: 8/13/13

_____ Disapproved

_____ File closed

Signed ____________________________ Date 8/14/12
Consent for Participation

Project Title: Speech and Language Support for All (SALSA) Development Project

Performance Site: _________ Elementary School

Child Assent Form

I, ____________________________, agree to be in a study to find ways to help children learn better in school. I will have to do work with my teacher and the Speech-Language Pathologist. I will allow my teachers and the Speech-Language Pathologist to share my papers and test scores with the people from LSU but my name will not be used.

I have to follow all the classroom rules and do all of my work. I can decide to stop being in the study at any time without getting in trouble.

_________________________  __________________________
Child's Signature          Age Date

Witness*  Date

* (N.B. Witness must be present for the assent process, not just the signature by the minor.)
Consent for Participation

Project Title: Speech and Language Support for All (SALSA) Development Project

Performance Site: __________ Elementary School

Investigators: The following investigator is available for questions, M-F, 8:00 a.m.-4:30 p.m.
Dr. Jan Norris COMD, LSU (225) 578-3936

Purpose of the Project: Your school and LSU are working together to provide the best possible program in oral and written language for all children. LSU teachers will work with the school's speech-language pathologist and classroom teachers throughout this school year. This project will measure changes children make in speech, language and literacy when the speech-language pathologist uses classroom materials and literacy to meet oral and written speech and language goals. It will also measure changes made by all children when language activities are taught within a whole class.

Inclusion Criteria: All children in grades pre-K through 5 including those who are receiving or have been referred to receive speech and language services.

Exclusion Criteria: No children will be excluded. The speech-language pathologists will work with whole classes as well as individuals, and test scores from whole classrooms will be used to analyze classroom progress.

Description of the Study: During the year, the speech-language pathologist will work with the teacher in the classroom on short language intervention in which your child may participate. Children seen by the speech-language pathologist may continue to be seen in small groups outside of the classroom. These are the usual educational settings in which your child typically receives instruction. The materials used by the speech-language pathologist will be relevant to what your child is learning in the classroom. We will use test scores including classroom tests, DIBELS, LEAP, ILEAP, ELA and others given by the school, classroom work, and the speech-language pathologist's daily measures to determine changes in oral and written language skills resulting from the literacy-focus. Students also will be assessed using language and reading measures to test whether interventions improve language, reading and writing skills at the beginning and end of the intervention.

Benefits: Subjects will have the opportunity to increase reading and language skills. These skills are important to higher performance in the classroom and on tests such as the LEAP. The study may identify intervention strategies that teachers and speech-language pathologists can use to improve the reading skills of their students. Better team work between professionals may also occur that will benefit all children.

Risks: There are no known risks.
Right to Refuse: Participation is voluntary, and a child will become part of the study only if both child and parent agree to the child’s participation. At any time, either the subject may withdraw from the study or the subject’s parent may withdraw the subject from the study without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: We will use test data to see if our assessments and interventions help children to become better readers and writers. The school records of participants in this study may be reviewed by investigators. Your child’s name will not be shared with anyone. We will anonymously enter the test score into a file for statistical analysis. Results of the study may be published, but no names or identifying information will be included for publication. Subject identity will remain confidential unless disclosure is required by law.

Financial Information: There is no cost for participation in the study, nor is there any compensation to the subjects for participation.

Signatures:

The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about subjects’ rights or other concerns, I can contact Robert C. Mathews, Chairman, Institutional Review Board, (225) 578-8692. I will allow my child to participate in the study described above and acknowledge the investigator’s obligation to provide me with a signed copy of this consent form.

______________________________  __________________________
Parent’s Signature                Date

The parent/guardian has indicated to me that he/she is unable to read. I certify that I have read this consent from to the parent/guardian and explained that by completing the signature line above he/she has given permission for the child to participate in the study.

______________________________  __________________________
Signature of Reader                Date
APPENDIX B
SEMANTICS BOARD

Metalanguage
- The word "penguin" starts with "p"
- The word "penguin" is a noun

Analogies – penguin mothers care for their babies like human mothers

Evaluation – penguin mothers are important for survival

Inference – mother penguins teach their babies to take care of themselves

Interpretation – the mother is protecting the baby

Attribute - mother has black beak and back, white stomach

Describe - the penguins are standing with their wings out

Label – they are penguins

Indicate - point to the penguins

Reaction - look at the picture when presented

Reaction not pictured

Elementary Vocabulary:
- Use classroom book
- Discuss each word along the SDS levels

Kindergarten Vocabulary Center "Now let's talk about the picture using the next bigger idea"
APPENDIX C
SAMPLE SDS LESSON PLAN

Metalanguage - Help the children read the sentence “I am a koala baby.” Give each child a chance to sequence the words to form the sentence. Help children identify the first letter and corresponding sound of words. Focus on articulation as needed.

Analogy - How is the koala mother like your mother? (Carried you as a baby, protects, snuggles, feeds)

Evaluation - Koala bears are cute, but should we try to touch or pet them? Why not? (They are wild animals and could hurt you. They could be very scared of humans. The mother might think you would harm her baby. Wild animals are different from pets)

Inference - Why do babies ride on their mother’s backs? (Too small to walk fast or climb, protection). Do other animals carry their babies on their backs? (Monkeys, chimps, possums, gorillas). Which animals carry their babies by their necks? (Dogs, cats, lions, mice, fox, squirrels, raccoons). Where might you see a koala bear? (Zoo)

Interpretation - How do the koalas feel? Why? (Happy, safe, comfortable, friendly, curious). What will they do next? (Walk away, eat some food, climb a tree, take a nap, play)

Attribution - What do the koalas look like? (Encourage adjectives such as soft, furry, brown and white, big nose, strong legs, round eyes, chubby, long hair on ears, dark nose).

Description - What is the mother koala doing? (Help children use verbs such as sitting, resting, looking, carrying). What is the baby doing? (Verbs holding on, climbing, hugging, snuggling)

Label - These are koala bears. The baby is called a joey. Koala bears live in a country called Australia.

Begin with small ideas ...
APPENDIX D
FIDELITY CHECKLIST

SALSA KINDERGARTEN INTERVENTION FIDELITY ASSESSMENT

Date: _____________________________ School: _____________________________
SLP: _____________________________ Observer: _____________________________

Introduction of Book & Semantic Picture Board
___ Utilizes & Introduces current Treasure’s book (name of book)____________________________
___ Presents SDS Semantic Levels Picture Board

"Now let’s talk about the picture. We’ll begin with small ideas.”

<table>
<thead>
<tr>
<th>Points to appropriate next level on SDS Semantic Picture Board</th>
<th>Says, “Now let’s talk about the picture using a bigger idea.”</th>
<th>Utilizes appropriate example of Concepts at each SDS level</th>
<th>Provides appropriate feedback (ex. Recasting, cloze, prompting using relational terms, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label (immediate environment, concrete thinking)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description (describing object’s functions or location)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attribution (some analysis such as classifying/grouping, seeing parts/characteristics within wholes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpretation (use own knowledge to interpret information that is present in text/illustration or environment)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inference (use own knowledge to make predictions or understand information beyond what is given)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation (abstract thought about outcomes, consequences, morality)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analogy (make comparisons between concepts or ideas)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Metalanguage
___ Presents MorphoPhonic cards associated with current Treasure’s book
___ Points to & Explains the Phonic Face (focusing on the speech cue associated with the letter-sound)
___ Points to the remainder of the word & explains the visual association to the meaning of the word.
___ Each child orders the scrambled cards to make the target sentence (with/without support)
___ Each child names the first letter & corresponding sound (with/without support)
___ MPF card used to prompt or provide appropriate feedback to facilitate correct articulation, syntax, morphology, etc.
VITA

Ashley Bourque completed her Bachelor of Arts degrees in English (Linguistics) and Communication Sciences and Disorders in 2004 at Louisiana State University. Upon graduation, she was employed as an educational aide by Plymouth Elementary in Plymouth, New Hampshire. Upon moving back to Louisiana, she completed her master’s degree in Communication Sciences and Disorders in 2008 at Louisiana State University. Following graduation, she simultaneously completed her clinical fellowship year at Pediatric Therapy Group and completed PhD coursework at Louisiana State University under the guidance of Dr. Janet Norris. Ashley received her certificate of clinical competence from the American Speech-Language Hearing Association in 2010. While studying at Louisiana State University, Ashley managed Drs. Norris and Paul Hoffman’s Language and Speech Intervention Lab, focusing primarily on early language and literacy interventions. Ashley worked closely with Dr. Janet Norris on the Speech and Language Support for All (SALSA) initiative. Ashley will be graduating with her Ph.D. in August 2013.